UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

CARDIOPULMONARY LABORATORY

AFSC 904X0

AFPT 90-904-926

OCTOBER 1990

OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000

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USAFOMC/OMYXL	10	2m	5	10

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TABLE OF CONTENTS

PREFACE

This report presents the results of an Air Force Occupational Survey of the Cardiopulmonary Laboratory (AFSC 904X0) career ladder. Authority for conducting occupational surveys is contained in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

Captain Doug Ketch developed the survey instrument, Ms Becky Hernandez provided computer programming support, and Mr Richard Ramos provided administrative support. Mr Daniel E. Dreher analyzed the data and wrote the final report. Lieutenant Colonel Charles D. Gorman, Chief, Airman Analysis, Occupational Analysis Program, reviewed and approved this report for release.

A Training Requirements Analysis (TRA) is being accomplished in conjunction with this OSR. The TRA will provide a comprehensive data base to support suggested changes in training for the career ladder. The TRA will contain three sections: a) System Overview - an overall perspective of the career ladder training; b) Task Analysis - detailed training decision data on technical tasks performed; and c) Training Requirements and Recommendations - suggestions of what should be taught, when, and where. Copies of the TRA may be obtained from USAF Occupational Measurement Squadron, Randolph AFB TX 78150-5000.

Copies of this report are distributed to Air Staff sections and other interested training and management personnel. Additional copies may be requested from the Occupational Measurement Squadron, Attention: Ch., USAF Occupational Analysis Program (OMY), Randolph AFB, Texas 78150-5000.

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SUMMARY OF RESULTS

1. Survey Coverage: This report is based on data collected from 202 respondents. Since all AFSC 90430 personnel are students in Phase II training, only members with the 5-, 7-, and 9-skill levels were considered for the study. The 202 respondents constitute 87 percent of assigned AFSC 904X0 personnel holding the 5- through 9-skill levels.

2. Career Ladder Structure: Survey data show there are four jobs in the Cardiopulmonary Functions cluster, plus four other independent jobs in the career ladder. The Cardiopulmonary Functions cluster includes the Cardiopulmonary Laboratory, Pulmonary Laboratory, Noninvasive Cardiology, and NCOIC jobs. The independent jobs are: Respiratory Therapy, Cardiac Catheterization Laboratory, Instructor, and Superintendent.

3. Career Ladder Progression: Survey data show Cardiopulmonary Laboratory personnel progress typically through the skill levels, with 5-skill level personnel spending more time on common cardiopulmonary functions, 7-skill level members spending more time on supervisory responsibilities, and 9-skill level personnel performing the management functions of the career ladder.

4. Specialty Descriptions: AFR 39-1 Specialty Descriptions accurately describe jobs and tasks performed by AFSC 904X0 personnel.

5. Training Analysis: Most portions of the STS dealing with technical topics and most of the Phase II POI are supported by survey data. About half of the entry-level POI is matched, and most matched objectives are supported. Unsupported elements of the STS deal with the same topics as the unsupported objectives of the Phase II POI. Unsupported objectives in the entry-level course, on the other hand, cover topics supported in the STS.

6. Job Satisfaction: Job satisfaction for respondents in this study and members of similar AFSCs surveyed in 1989 were compared, and data show AFSC 904X0 personnel have somewhat higher satisfaction indicators than their counterparts in other medical AFSCs. Overall satisfaction has improved somewhat over the years. Reenlistment intentions, on the other hand, are down noticeably for members of all TAFMS groups. Members of most jobs find their work interesting and feel their talents and training are used. Those with the Cardiac Catheterization and Respiratory Therapy jobs have the highest overall indicators, while those with the Noninvasive Cardiology job have the lowest indicators.

7. Special Issues: Survey data show most Cardiopulmonary Laboratory personnel use computerized laboratory equipment. The Cardiac Catheterization and Respiratory Therapy jobs are quite separate from other cardiopulmonary jobs. Most AFSC 904X0 personnel work in a medical center, with very few assigned to a clinic.

8. Implications. Survey data show the career ladder has remained essentially the same over the last several years. Members progress typically through the specialty. Survey data suggest the STS and POIs for the entry level and Phase II courses need to be reviewed, as there are some unsupported parts of each.

OCCUPATIONAL SURVEY REPORT
CARDIOPULMONARY LABORATORY CAREER LADDER
(AFSC 904X0)

INTRODUCTION

This is a report of an occupational survey of the Cardiopulmonary Laboratory (AFSC 904X0) career ladder completed by the USAF Occupational Measurement Squadron in August 1990. This career ladder was last surveyed in 1982. The present study was requested by HQ ATC/SGAT, Randolph AFB TX, and 3790 MSTW/MSOXA, Sheppard AFB TX, because of the length of time from the previous OSR, and because assistance was needed for training decisions related to different career specialties, cardiology and respiratory therapy.

Background

The AFR 39-1 Specialty Descriptions state that 3- and 5-skill level AFSC 904X0 personnel perform pulmonary team functions, assist cardiologists and pulmonary specialists, operate and monitor physiology equipment, collect and maintain data, assist in administering tests for evaluating heart and lungs, and support aeromedical evacuation.

Seven-skill level members perform the same technical tasks as do 3- and 5-skill level members, but also supervise cardiopulmonary teams and analyze data.

Members enter the career ladder by attending a 57-day Apprentice Cardiopulmonary Laboratory course conducted at Sheppard AFB TX. This course curriculum includes basic medical readiness, introduction to medical fundamentals, introduction to cardiopulmonary technology, anatomy and physiology, cardiopulmonary procedures, respiratory therapy procedures, and emergency procedures.

Members are awarded the 3-skill level when they complete the introductory course, and immediately begin the 30-week Phase II training in one of seven hospitals around the country. Here, they assist physicians in performing diagnostic procedures and therapy regimens. When they successfully complete Phase II training, they are awarded the 5-skill level.

SURVEY METHODOLOGY

Data for this survey were collected using USAF Job Inventory AFPT 90-904-926 (April 1990). The Inventory Developer reviewed pertinent career ladder documents, the previous OSR and job inventory, and then prepared a tentative task list. The task list was validated through personal interviews with 26 subject-matter experts at the following locations:

BASE	REASON FOR VISIT
Sheppard AFB TX	Technical school
Wright-Patterson AFB OH	Has a large medical center with Phase II training
Carswell AFB TX	Has a regional hospital with Phase II training
Tinker AFB OK	Has a small 2-person cardiopulmonary laboratory
Wilford Hall Medical Center	Is a very large medical center with the largest number of AFSC 904X0 assigned

The final inventory contains 342 tasks, standard background questions asking for paygrade, DAFSC, organization of assignment, MAJCOM, duty title, TAFMS, time in career ladder, plus additional background questions asking respondents to indicate the type of medical facility they are assigned to, how many AFSC 904X0 personnel are in the laboratory, how much time per day they use computerized laboratory equipment, and specific items of equipment they use. School and functional personnel will use responses to these questions to evaluate training and determine if the career ladder needs to be split into two separate specialties.

Survey Administration

From April through July 1990, Consolidated Base Personnel Offices at operational bases worldwide administered the surveys to AFSC 904X0 personnel selected from a computer-generated mailing list provided by the Air Force Human Resources Laboratory. Respondents were asked to complete the identification and biographical information section first, go through the booklet and mark all tasks they perform in their current job, and then go back and rate each task they marked on a 9-point scale reflecting the relative amount of time spent on each task. Time spent ratings range from 1 (indicating a very small amount of time spent) to 9 (indicating a very large amount of time spent).

The computer calculated the relative percent time spent on all tasks for each respondent by first totaling ratings on all tasks, dividing the rating for each task by this total, and multiplying by 100. The percent time spent ratings from all inventories were then combined and used with percent member performing values to describe various groups in the career ladder.

Survey Sample

The final sample includes responses from 202 AFSC 904X0 members. As shown in Tables 1 and 2, the MAJCOM and paygrade representation of the sample is very close to that of the total AFSC 904X0 population.

Data Processing and Analysis

Once the job inventories were received from the field, the booklets were screened for completeness and accuracy, and responses were manually entered to create a complete case record for each respondent. Comprehensive Occupational Data Analysis Programs (CODAP) then created a job description for each respondent, as well as composite job descriptions for members of various demographic groups. These job descriptions were used for much of the occupational analysis.

Task Factor Administration

Personnel who make decisions about career ladder documents and training programs use task factor data (training emphasis (TE) and task difficulty ratings (TD), as well as job descriptions. The survey process normally provides these data by asking selected E-6 and E-7 supervisors to complete either a TE or TD booklet. These booklets are processed separately from the job inventories and TE and TD data, when applicable, and are considered when analyzing other issues in the study. Because the AFSC 904X0 career ladder is quite small and the work quite specialized, E-7 supervisors were only asked to fill out TE booklets.

Training Emphasis (TE). Training emphasis is defined as the amount of structured training that first-enlistment personnel need to perform tasks successfully. Structured training is defined as training provided by resident technical schools, field training detachments, mobile training teams, formal OJT, or any other organized training method. Fifty-seven experienced AFSC 904X0 supervisors rated the tasks in the inventory on a 10-point scale ranging from 0 (no training emphasis required) to 9 (high training emphasis required). Interrater agreement for these 57 raters is acceptable. The mean TE rating for tasks in the inventory is 3.62, and the standard deviation is 1.99. Any task with a TE rating of 4.61 or greater is considered to have high training emphasis.

TABLE 1

MAJCOM REPRESENTATION IN SAMPLE

COMMAND	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE
ATC	34	33
MAC	19	19
TAC	11	11
AFLC	10	10
SAC	8	9
AFSC	7	6
OTHER**	11	12

TOTAL ASSIGNED = 235
TOTAL ELIGIBLE = 220
TOTAL IN SAMPLE = 202
PERCENT OF ASSIGNED IN SAMPLE = 87%
PERCENT OF ELIGIBLE IN SAMPLE = 93%

* As of April 1990
** Other commands include AAC, USAFE, USAFA, PACAF, and other elements in Europe

TABLE 2

PAYGRADE DISTRIBUTION OF SAMPLE

PAYGRADE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
E-1 to E-3	11	11
E-4	27	27
E-5	33	34
E-6	16	16
E-7	10	9
E-8	2	2
E-9	1	1

SPECIALTY JOBS
(Career Ladder Structure)

The first step in the analysis process is to identify the structure of the career ladder in terms of jobs performed. CODAP assists by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings. This process continues until all respondents have been included in a group.

Overview

Survey data show there are four jobs in the Cardiopulmonary Functions cluster, plus four other independent jobs. The four jobs in the Cardiopulmonary Functions cluster are: Cardiopulmonary Laboratory, Pulmonary Laboratory, Noninvasive Cardiology, and NCOIC. The four independent jobs are: Respiratory Therapy, Cardiac Catheterization Laboratory, Instructor, and Superintendent. Percentages of AFSC 904X0 personnel with the various jobs is shown in Figure 1. The percent time members of these jobs spend on duties is shown in Table 3, while selected background information on members in these jobs is presented in Table 4. The Stage (STG) number listed beside the title is a reference number assigned by CODAP, while the letter "N" refers to the number of respondents in the job.

I. CARDIOPULMONARY FUNCTIONS CLUSTER

- A. Cardiopulmonary Laboratory Job (STG033, N=54)
- B. Pulmonary Laboratory Job (STG022, N=13)
- C. Noninvasive Cardiology Job (STG019, N=16)
- D. NCOIC Job (STG035, N=34)

II. RESPIRATORY THERAPY JOB (STG024, N=43)

III. CARDIAC CATHETERIZATION LABORATORY JOB (STG032, N=14)

IV. INSTRUCTOR JOB (STG031, N=6)

V. SUPERINTENDENT JOB (STG025, N=7)

A description of each job is presented below. Representative tasks performed by members within each job are listed in Appendix A.

AFSC 904X0 CAREER LADDER JOBS

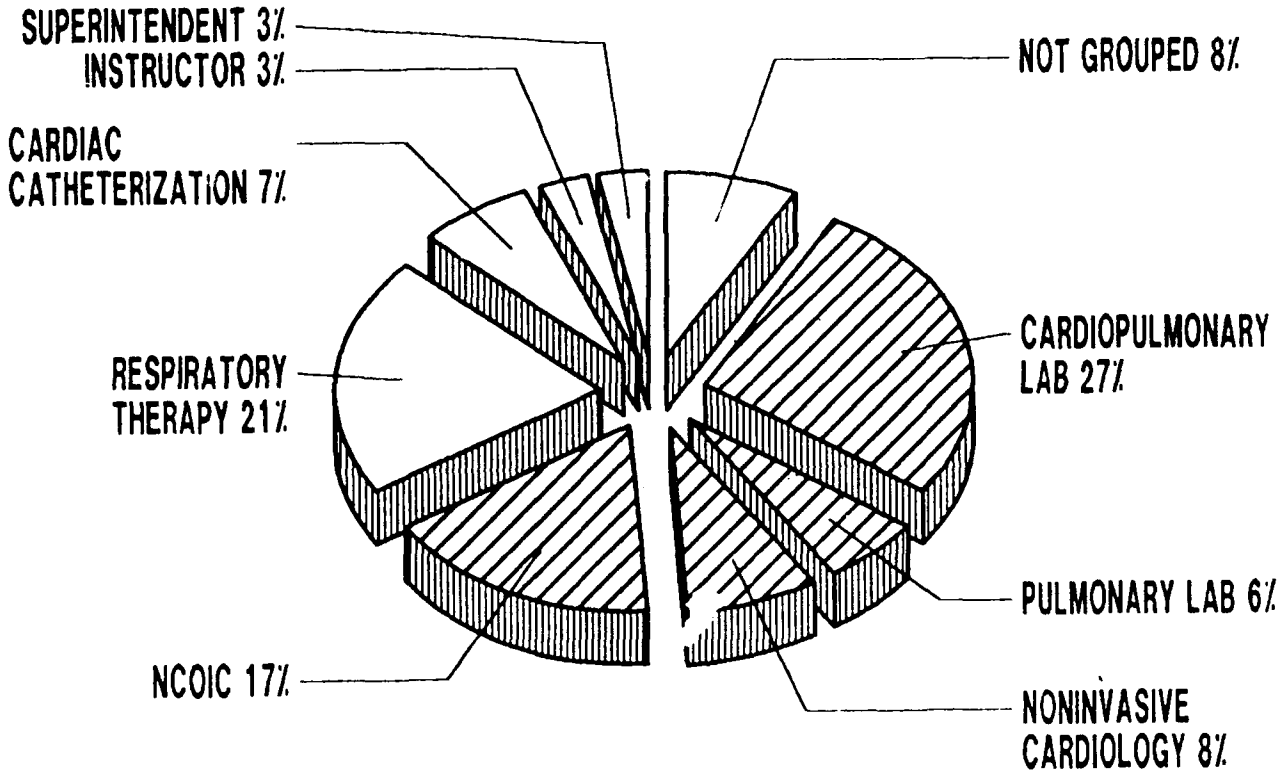

FIGURE 1

TABLE 3

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF CAREER LADDER JOBS
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	CARDIO-PULMONARY LAB (N=54)	PULMONARY LAB (N=13)	NONINV CARDIO (N=16)	NCOIC (N=34)
A ORGANIZING AND PLANNING	3	3	4	10
B DIRECTING AND IMPLEMENTING	3	4	4	8
C INSPECTING AND EVALUATING	2	2	3	8
D TRAINING	2	6	3	10
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	13	10	9	13
F PERFORMING TASKS COMMON TO RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR FUNCTIONS	24	23	25	17
G PERFORMING INVASIVE CARDIOVASCULAR PROCEDURES	*	*	1	*
H PERFORMING NONINVASIVE CARDIOVASCULAR PROCEDURES	23	2	44	14
I PERFORMING PULMONARY LABORATORY PROCEDURES	11	29	3	7
J PERFORMING RESPIRATORY THERAPY	13	16	1	10
K PERFORMING MAINTENANCE AND CLEANING OF CARDIOPULMONARY EQUIPMENT	5	5	3	3

* Denotes less than 1 percent

TABLE 3 (CONTINUED)

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF CAREER LADDER JOBS
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	RESP THERAPY (N=43)	CARDIAC CATH (N=14)	INSTR (N=6)	SUPT (N=7)
A ORGANIZING AND PLANNING	4	4	10	26
B DIRECTING AND IMPLEMENTING	4	4	11	20
C INSPECTING AND EVALUATING	3	2	8	27
D TRAINING	3	2	36	10
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	7	5	7	12
F PERFORMING TASKS COMMON TO RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR FUNCTIONS	17	29	12	2
G PERFORMING INVASIVE CARDIOVASCULAR PROCEDURES	*	41	2	0
H PERFORMING NONINVASIVE CARDIOVASCULAR PROCEDURES	*	4	2	0
I PERFORMING PULMONARY LABORATORY PROCEDURES	2	*	3	0
J PERFORMING RESPIRATORY THERAPY	53	2	6	2
K PERFORMING MAINTENANCE AND CLEANING OF CARDIOPULMONARY EQUIPMENT	6	7	2	*

* Denotes less than 1 percent

TABLE 4

SELECTED BACKGROUND DATA ON MEMBERS IN CAREER LADDER JOBS

	CARDIO-PULMONARY LAB (STG033)	PULMONARY LAB (STG022)	NONINV CARDIO (STG019)	NCOIC (STG035)
NUMBER IN GROUP	54	13	16	34
PERCENT OF SAMPLE	27%	6%	8%	17%
PERCENT IN CONUS	87%	100%	100%	85%
DAFSC DISTRIBUTION				
90450	74%	31%	56%	18%
90470	26%	69%	38%	74%
90490	0	0	6%	9%
PAYGRADE DISTRIBUTION				
AIRMAN	26%	23%	19%	0
E-4	39%	15%	31%	12%
E-5	15%	31%	25%	26%
E-6	17%	23%	19%	32%
E-7	4%	8%	0	829%
E-8	0	0	6%	0
E-9	0	0	0	0
AVERAGE MONTHS TAFMS	87	121	107	169
AVERAGE NUMBER OF TASKS PERFORMED	113	111	65	166
PERCENT IN FIRST ENLISTMENT	39%	31%	25%	3%
PERCENT SUPERVISING	33%	38%	31%	94%

TABLE 4 (CONTINUED)

SELECTED BACKGROUND DATA FOR CAREER LADDER JOBS

	RESP THERAPY (STG024)	CARDIAC CATH (STG032)	INSTR (STG031)	SUPT (STG025)
NUMBER IN GROUP	43	14	6	7
PERCENT OF SAMPLE	21%	7%	3%	3%
PERCENT IN CONUS	98%	100%	100%	100%
DAFSC DISTRIBUTION				
90450	67%	53%	29%	14%
90470	33%	47%	71%	71%
90490	0	0	0	14%
PAYGRADE DISTRIBUTION				
AIRMAN	33%	13%	0	0
E-4	33%	27%	14%	0
E-5	21%	40%	57%	0
E-6	9%	0	14%	14%
E-7	5%	20%	14%	71%
E-8	0	0	0	14%
E-9	0	0	0	0
AVERAGE TAFMS (MOS)	78	111	128	227
AVERAGE NUMBER OF TASKS PERFORMED	70	86	68	53
PERCENT IN FIRST ENLISTMENT	42%	20%	0	0
PERCENT SUPERVISING	37%	47%	29%	100%

I. CARDIOPULMONARY FUNCTIONS CLUSTER. Over half the members of the sample have jobs related to Cardiopulmonary Functions. Survey data show, while all these jobs include a number of common tasks related to cardiopulmonary procedures, the individual jobs are distinguished by the emphasis on tasks unique to the specific job. Sixty-seven percent are in paygrades E-1 through E-5, and over half hold the 5-skill level. Overall, members with these jobs spend 21 percent of their duty time performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions, 18 percent performing noninvasive cardiovascular functions, 12 percent performing respiratory functions, 13 percent on administrative or supply functions, and 12 percent performing pulmonary laboratory procedures. Each job within the cluster will be discussed individually below.

A. Cardiopulmonary Laboratory Job (STG033, N=54). Twenty-seven percent of all respondents have this job. Members with this job are somewhat junior, as 35 of the 54 are in paygrades E-3 and E-4, 21 are in their first enlistment, and 40 hold the 5-skill level. Thirty are assigned to a hospital other than a regional hospital, while 19 work in a regional hospital. Most work in cardiopulmonary laboratories that have between two and six AFSC 904X0 personnel assigned. Members with this job spend 24 percent of their time performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions, 23 percent of their time performing noninvasive cardiovascular functions, 13 percent on administrative or supply functions, 13 percent performing respiratory therapy, and 11 percent performing pulmonary laboratory procedures. Members with this job perform an average of 121 tasks and are distinguished by the time they spend performing the following general cardiopulmonary tasks:

perform arterial punctures
inspect cardiopulmonary equipment
assess and report ECG test results to physician
schedule patients for treatments
remove or replace cardiopulmonary equipment components, such as electrodes, filters, fuses, or bulbs
disinfect nondisposable cardiopulmonary equipment components
set up standard nebulizers

B. Pulmonary Laboratory Job (STG022, N=13). AFSC 904X0 personnel with this job are somewhat more senior, as they average 121 months TAFMS, nine hold the 7-skill level, and nine are in paygrades E-3 through E-5. Five respondents report working in a unit with 2 or 3 AFSC 904X0 personnel, while another 4 report working in a unit having more than 10 assigned. Ten of the 13 are assigned to a medical center. Members with this job perform an average of 111 tasks and spend 29 percent of their duty time performing pulmonary laboratory procedures, 23 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions. Members with this job are distinguished by the time they spend performing the following unique pulmonary function tasks:

perform flow/volume loop tests
perform postbronchodilator studies
instruct patients in flow/volume loop test procedures
perform lung diffusion tests
instruct patients in lung diffusion tests
set up lung diffusion equipment
set up bronchoscopy equipment

C. Noninvasive Cardiology Job (STG019, N=16). Persons with this job differ from those with the other cardiopulmonary jobs in that, while they perform many of the same general tasks, they spend more time on tasks related specifically to echocardiogram and other noninvasive procedures. Nine hold the 5-skill level and six hold the 7-skill level. Most are assigned to units with between 2 and 10 AFSC 904X0 personnel, and they work in either a nonregional hospital or a medical center. Members with this job spend 44 percent of their duty time performing noninvasive cardiovascular functions, 25 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions, and 9 percent on administrative or supply functions. Members of this job are distinguished by the time they spend performing the following tasks:

perform cardiac doppler echocardiograms
perform color doppler echocardiograms
assess and report echocardiogram test results to physicians
calculate echocardiograms
set up echocardiograph machines
prepare patients for echocardiograms

D. NCOIC Job (STG035, N=34). These 35 respondents are first-line supervisors, as they perform a mixture of technical and supervisory tasks and report having the job title of NCOIC. They are more senior personnel, as they average 169 months TAFMS, 21 are paygrades E-6 or E-7, 25 hold the 7-skill level, and 3 the 9-skill level. They spend 17 percent of their duty time performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions, 14 percent performing noninvasive cardiovascular functions, 13 percent performing administrative or supply functions, 10 percent performing respiratory therapy, 10 percent organizing and planning, and 10 percent training. The role of the NCOIC as a supervisor is shown by the time they spend performing the following tasks:

determine work priorities
evaluate personnel for compliance with performance standards
counsel personnel on personal or military-related matters
interpret policies, directives, or procedures for subordinates

evaluate patient care
establish performance standards for subordinates
write EPRs

II. RESPIRATORY THERAPY JOB (STG024, N=43). Forty-three respondents were identified separately as having this job because they perform a number of tasks dealing specifically with respiratory therapy. These are the most junior group, as they average 78 months TAFMS, 28 are in paygrades E-3 or E-4, and 29 hold the 5-skill level. Thirty-five report working in a unit that has more than 10 AFSC 904X0 personnel, and all are assigned to a medical center. Members with this job spend 53 percent of their duty time performing respiratory therapy functions, and 17 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions. They perform an average of 32 tasks and are distinguished by the time they spend performing the following tasks:

adjust ventilator settings
perform routine ventilation checks and adjustments
set up respiratory alarms
adjust respiratory alarms
wean patients from ventilators
set up oxygen delivery devices
connect flowmeters

III. CARDIAC CATHETERIZATION LABORATORY JOB (STG032, N=14). This is a very specialized job performed mainly in medical center units that have between four and six AFSC 904X0 personnel assigned. Members average 111 months TAFMS, most are in paygrades E-4 or E-5 and hold the 5- and 7-skill levels, and spend 41 percent of their duty time performing invasive cardiovascular procedures, and 27 percent of their time performing tasks common to respiratory therapy. AFSC 904X0 personnel with the Cardiac Catheterization Laboratory Job perform an average of 86 tasks and are distinguished by the time they spend on the following specialized tasks:

set up sterile field
prepare site for catheter insertion
set up cardiac catheterization trays
connect transducers to pressure lines
set up thermodilution injectors or syringes
attach ECG leads to physiological monitoring devices
connect transducers to Swan-Ganz catheters

IV. INSTRUCTOR JOB (STG031, N=6). Three of the six members with this job are resident course instructors at the technical school located at Sheppard AFB, and three are Phase II instructors. Two hold the 5-skill level, and four hold the 7-skill level. Instructors indicate they spend 42 percent of their time training, 12 percent directing and implementing, and 11 percent

performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions. They are distinguished by the time they spend performing the following training tasks:

evaluate progress of trainees
counsel trainees on training progress
conduct resident course classroom training
administer tests
maintain training records, charts, or graphs
develop performance tests
develop Phase II curriculum materials

V. SUPERINTENDENT JOB (STG025, N=7). Seven respondents were identified as having this job. Members with this job are unique, as they spend 27 percent of their duty time inspecting and evaluating, 26 percent organizing and planning, 20 percent directing and implementing, 12 percent performing administrative or supply functions, and 10 percent training. Superintendents are the most senior members of the career ladder, averaging 227 months TAFMS, most are in paygrades E-7 or E-8, and most hold the 7-skill level. Superintendents are distinguished by the time they spend performing the following tasks:

evaluate inspection report findings
evaluate safety or security programs
coordinate work activities with other sections
schedule personnel for leave or temporary duty (TDY) assignment
implement safety or security programs
analyze workload requirements
assign personnel to duty positions

Comparison to Previous Survey

Jobs identified in the present survey were compared to those reported in the previous OSR (see Table 5). The basic structure of the career ladder has not changed over the years. Differences in job names shown in Table 5 reflect how tasks were grouped in the latest inventory and use of the CODAP task clustering process to identify jobs performed by survey respondents.

Summary

Survey data show there are a number of jobs in the career ladder, half of which fall into the Cardiopulmonary Functions cluster. While nearly all members of the career ladder perform some common tasks, individual jobs are distinguished by the specific tasks members in the jobs perform and the amount of time spent performing these tasks. Career ladder jobs have remained stable over the last several years and are reflected by the current classification structure.

TABLE 5

COMPARISON OF CAREER LADDER STRUCTURE FOR
CURRENT AND PREVIOUS SURVEY

JOBS IDENTIFIED IN CURRENT STUDY	JOBS IDENTIFIED IN PREVIOUS OSR
RESPIRATORY THERAPY	RESPIRATORY THERAPY PERSONNEL
	RESPIRATORY THERAPY TECHNICIAN-SUPERVISORS
CARDIOPULMONARY LABORATORY	GENERAL CARDIOPULMONARY LABORATORY PERSONNEL
NONINVASIVE CARDIOLOGY	NONINVASIVE CARDIOLOGY PERSONNEL
	NONINVASIVE CARDIOLOGY TECHNICIAN-SUPERVISORS
PULMONARY LABORATORY	PULMONARY PERSONNEL
NCOIC	LABORATORY NCOICs
CARDIAC CATHETERIZATION LABORATORY	CARDIO-CATHETERIZATION LABORATORY PERSONNEL
INSTRUCTOR	NOT IDENTIFIED
SUPERINTENDENT	NOT IDENTIFIED

CAREER LADDER PROGRESSION

Analysis of DAFSC groups, together with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed by members of the various skill-level groups, which in turn may be used to determine how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Speciality Training Standard (STS), reflect what members of the various skill-level groups are doing.

The distribution of skill-level members across the specialty jobs is displayed in Table 6, while relative amounts of time members of the various skill-level groups spend on duties is shown in Table 7. These data show most AFSC 90450 personnel have either the Cardiopulmonary Laboratory or Respiratory Therapy job, and spend most of their duty time performing tasks related to these two jobs. Seven-skill level members assume supervisory responsibilities as shown by the greater percentage with the NCOIC job and time spent on supervisory and administrative duties. Nine-skill level members spend the least amount of time on technical tasks and concentrate their time on duties related to career ladder management.

SKILL-LEVEL DESCRIPTIONS

DAFSC 90450. Over half the members of the sample hold the 5-skill level. As noted, most have either the Cardiopulmonary Laboratory or Respiratory Therapy job. AFSC 90450 personnel are the more junior members of the career ladder, having completed Phase II training, averaging 55 months TAFMS, and almost half are in paygrade E-4. Forty-seven percent are assigned to a medical center. AFSC 90450 personnel perform an average of 88 tasks, a representative sample of which are listed in Table 8.

DAFSC 90470. Seven-skill level personnel constitute 47 percent of the total sample. As shown in Table 6, 27 percent have the NCOIC job. Seven-skill level members have a broader job, as they perform an average of 108 tasks, including a mixture of technical and supervisory tasks. Sixty-four percent are assigned to a medical center, 75 percent report having supervisory responsibilities, most are in paygrades E-5 or E-6, and they average 177 months TAFMS. Representative tasks performed by AFSC 90470 personnel are listed in Table 9, and tasks which best distinguish between AFSC 90450 and 90470 personnel are listed in Table 10. Figures in the top portion of the table show a greater percentage of 5-skill level personnel perform cardiopulmonary tasks, while figures in the lower half show more 7-skill level members perform supervisory tasks.

DAFSC 90490. There are five 9-skill level respondents in the sample. Three were identified as having the NCOIC job, one has the Noninvasive Cardiology job, and the last has the Superintendent job. Superintendents are the most senior members of the career ladder, as they average 201 months TAFMS. They

TABLE 6

DISTRIBUTION OF SKILL-LEVEL MEMBERS
ACROSS CAREER LADDER JOBS
(PERCENT)

JOBS	90450 (N=105)	90470 (N=92)	90490 (N=5)
CARDIOPULMONARY LABORATORY	38	15	0
PULMONARY LABORATORY	4	10	0
NONINVASIVE CARDIOLOGY	9	6	20
NCOIC	6	27	60
RESPIRATORY THERAPY	28	15	0
CARDIAC CATHETERIZATION	8	8	0
INSTRUCTOR	2	5	0
SUPERINTENDENT	1	5	20
NOT GROUPED	4	9	0

TABLE 7

TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS
(RELATIVE PERCENT OF JOB TIME)

DUTIES	90450 (N=105)	90470 (N=92)	90490 (N=5)
A ORGANIZING AND PLANNING	3	8	16
B DIRECTING AND IMPLEMENTING	3	8	2
C INSPECTING AND EVALUATING	2	7	15
D TRAINING	3	9	7
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	9	12	15
F PERFORMING TASKS COMMON TO RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR FUNCTIONS	22	17	12
G PERFORMING INVASIVE CARDIOVASCULAR PROCEDURES	4	4	*
H PERFORMING NONINVASIVE CARDIOVASCULAR PROCEDURES	15	12	10
I PERFORMING PULMONARY LABORATORY PROCEDURES	7	7	4
J PERFORMING RESPIRATORY THERAPY	26	12	8
K PERFORMING MAINTENANCE AND CLEANING OF CARDIOPULMONARY EQUIPMENT	6	4	1

* Denotes less than 1 percent

TABLE 8

REPRESENTATIVE TASKS PERFORMED BY 90450 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=105)
F148	PERFORM ARTERIAL PUNCTURES	86
J302	CONNECT FLOWMETERS	77
J295	ADJUST VENTILATOR SETTINGS	75
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	75
F122	ADMINISTER MEDICATIONS	75
F139	DISPOSE OF CONTAMINATED MATERIALS	74
J330	SET UP STANDARD HUMIDIFIERS	72
J332	SET UP VOLUME VENTILATORS	72
K337	INSPECT CARDIOPULMONARY EQUIPMENT	72
J326	SET UP OXYGEN DELIVERY DEVICES	71
J294	ADJUST RESPIRATORY THERAPY ALARMS	69
J331	SET UP STANDARD NEBULIZERS	69
F156	PREPARE MEDICATIONS	69
K334	ASSEMBLE OR DISASSEMBLE NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	68
J329	SET UP RESPIRATORY THERAPY ALARMS	67
F173	TAKE AND RECORD BLOOD PRESSURE	67
K336	DISINFECT NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	67
H233	PERFORM ECG TESTS	66
J320	RECORD PROGRESS OF RESPIRATORY THERAPY TREATMENT	66
J333	WEAN PATIENTS FROM VENTILATORS	66
K342	WASH AND DRY NONDISPOSABLE CARDIOPULMONARY EQUIPMENT	64
J328	SET UP PRESSURE VENTILATORS	63
J318	PERFORM ROUTINE VENTILATION CHECKS AND ADJUSTMENTS	63
J301	CALIBRATE OXYGEN ANALYZERS	62
F174	TAKE AND RECORD VITAL SIGNS, SUCH AS PULSE, RESPIRATION, OR TEMPERATURE OTHER THAN BLOOD PRESSURE	62
F157	PREPARE PATIENTS FOR ECGs	61
J293	ADJUST OXYGEN BLENDER SETTINGS	60
H235	PERFORM EXERCISE STRESS TESTS	54
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	54
F153	PERFORM INFECTION CONTROL OR UNIVERSAL PRECAUTION PROCEDURES	53
F159	PREPARE PATIENTS FOR TREADMILL TESTS	53
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	52

TABLE 9

REPRESENTATIVE TASKS PERFORMED BY 90470 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=92)
C49	WRITE EPRs	76
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	75
B31	SUPERVISE CARDIOPULMONARY LABORATORY SPECIALISTS (AFSC 90450)	74
A5	DETERMINE WORK PRIORITIES	74
B28	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	71
F148	PERFORM ARTERIAL PUNCTURES	71
C41	EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	70
A4	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	70
K337	INSPECT CARDIOPULMONARY EQUIPMENT	68
F144	INTERPRET ARRHYTHMIAS	66
B24	DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT AND SUPPLIES	66
A3	COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS	65
F153	PERFORM INFECTION CONTROL OR UNIVERSAL PRECAUTION PROCEDURES	65
J326	SET UP OXYGEN DELIVERY DEVICES	62
C40	EVALUATE PATIENT CARE	61
F145	MONITOR ECGs	61
A10	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	60
K336	DISINFECT NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	60
H233	PERFORM ECG TESTS	59
C35	ANALYZE WORKLOAD REQUIREMENTS	55
F157	PREPARE PATIENTS FOR ECGs	55
E114	PREPARE REQUISITIONS FOR EQUIPMENT OR SUPPLIES	54
H224	INSTRUCT PATIENTS IN ECG PROCEDURES	51
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	51
B30	SUPERVISE APPRENTICE CARDIOPULMONARY LABORATORY SPECIALIST (AFSC 90430)	49
D64	EVALUATE PROGRESS OF TRAINEES	46
E119	SCHEDULE PATIENTS FOR EVALUATIONS OR CONSULTATIONS	40
B33	SUPERVISE CIVILIAN PERSONNEL	30
E115	PREPARE STATISTICAL REPORTS	30

TABLE 10

EXAMPLES OF TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 90450 AND DAFSC 90470 PERSONNEL (PERCENT MEMBERS PERFORMING)

TASKS		90450 (N=105)	90470 (N=92)	DIFFERENCE
J327	SET UP POSITIVE END EXPIRATORY PRESSURE (PEEP) DEVICES	59	33	26
J329	SET UP RESPIRATORY THERAPY ALARMS	67	41	26
J320	RECORD PROGRESS OF RESPIRATORY THERAPY TREATMENT	66	43	23
J333	WEAN PATIENTS FROM VENTILATORS	66	46	20
C49	WRITE EPRs	24	76	-52
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	30	75	-45
B28	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	28	71	-43
C41	EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	27	70	-43
A10	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	20	60	-40

are assigned to either a regional hospital or medical center, three are in paygrade E-7 and two are in paygrade E-8, and they spend more time on administrative duties and less time on technical duties than members with the other skill levels (see Table 7). Representative tasks these 9-skill level members perform are listed in Table 11, while tasks that best distinguish between 7-skill level respondents and members of this senior group are listed in Table 12. Figures in the top portion of the table show a greater percentage of 7-skill level personnel perform technical and supervisory tasks, while figures in the lower half clearly show more 9-skill level personnel perform managerial tasks.

Summary

Survey data show Cardiopulmonary Laboratory personnel progress typically through the skill levels, with 5-skill level personnel spending more time on common cardiopulmonary functions, 7-skill level members spending more time on supervisory responsibilities, and 9-skill level personnel performing the management functions of the career ladder.

AFR 39-1 SPECIALTY JOB DESCRIPTION ANALYSIS

Survey data show the AFR 39-1 Specialty Descriptions accurately reflect the jobs and tasks currently being performed in the career ladder.

ANALYSIS OF MAJCOM GROUPS

Survey data show there are some slight differences in time spent across duties by members of MAJCOMs. Figures in Table 13 show members of AFSC spend more time performing invasive cardiovascular procedures than members of other MAJCOMs. AFSC 904X0 personnel in ATC are shown to spend more time performing respiratory therapy, probably because of the large number of retirees and dependents treated in the medical centers located on ATC AFBs.

TRAINING ANALYSIS

Occupational survey data are a source of information used to review training documents for the specialty. The three most commonly used types of data are: (1) percent of first-enlistment personnel performing tasks, (2) ratings of how much training emphasis tasks should receive in the basic resident course, and (3) ratings of relative task difficulty. Only percent members performing and TE data were collected in this study.

TABLE 11

REPRESENTATIVE TASKS PERFORMED BY 90490 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=5)
E121	WRITE SPECIAL REPORTS, SUCH AS QUARTERLY REPORTS, OIs, STANDARD OPERATING PROCEDURES, AND HOSPITAL REGULATIONS	100
A10	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	100
B28	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	100
C35	ANALYZE WORKLOAD REQUIREMENTS	100
A9	ESTABLISH ORGANIZATIONAL POLICIES	100
C41	EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	100
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	100
B23	DIRECT MAINTENANCE OF ADMINISTRATIVE FILES	100
B26	IMPLEMENT WORK METHODS	100
C38	EVALUATE INSPECTION REPORT FINDINGS	100
C45	INDORSE ENLISTED PERFORMANCE REPORTS (EPR)	100
A6	DEVELOP ORGANIZATIONAL CHARTS	100
A7	DEVELOP WORK METHODS OR PROCEDURES	100
B20	CONDUCT STAFF MEETINGS	100
B21	CONDUCT SUPERVISORY ORIENTATIONS OF NEWLY ASSIGNED PERSONNEL	100
C42	EVALUATE SAFETY OR SECURITY PROGRAMS	100
C40	EVALUATE PATIENT CARE	100
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	100
A4	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	100
E109	MAINTAIN GENERAL CORRESPONDENCE, FILES, RECORDS, OR LABORATORY REPORTS	80
A8	DRAFT BUDGET REQUIREMENTS	80
C37	EVALUATE BUDGET REQUIREMENTS	80
E115	PREPARE STATISTICAL REPORTS	80
A3	COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS	80
C48	WRITE CIVILIAN PERFORMANCE RATINGS OR SUPERVISORY APPRAISALS	80
B24	DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT AND SUPPLIES	80
A5	DETERMINE WORK PRIORITIES	80
C36	EVALUATE ADMINISTRATIVE FILES OR PROCEDURES	80
C43	EVALUATE UNIT EMERGENCY OR DISASTER PLANS	80

TABLE 12

EXAMPLES OF TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 90470 AND DAFSC 90490 PERSONNEL (PERCENT MEMBERS PERFORMING)

TASKS		90470 (N=92)	90490 (N=5)	DIFFERENCE
F146	MONITOR PATIENTS WHILE TRANSPORTING WITHIN HOSPITAL	41	0	41
E113	MAINTAIN STOCK LEVELS OF GENERAL SUPPLIES OR FORMS	57	20	37
F139	DISPOSE OF CONTAMINATED MATERIALS	57	20	37
I266	INSTRUCT PATIENTS IN HELIUM DILUTION TESTS	34	0	34
I276	PERFORM HELIUM DILUTION TESTS	33	0	33
A9	ESTABLISH ORGANIZATIONAL POLICIES	25	100	-75
A6	DEVELOP ORGANIZATIONAL CHARTS	26	100	-74
E116	RESEARCH INDEXES TO LOCATE OFFICIAL PUBLICATIONS	7	80	-73
A19	WRITE JOB OR POSITION DESCRIPTIONS	41	100	-59
C42	EVALUATE SAFETY OR SECURITY PROGRAMS	42	100	-58

TABLE 13

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF MAJCOMs
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	AAC (N=6)	USAFA (N=6)	USAFE (N=4)	AFLC (N=20)	AFSC (N=13)
A ORGANIZING AND PLANNING	3	2	6	5	7
B DIRECTING AND IMPLEMENTING	3	3	5	6	6
C INSPECTING AND EVALUATING	2	2	5	6	6
D TRAINING	4	3	6	8	3
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	10	8	19	11	9
F PERFORMING TASKS COMMON TO RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR FUNCTIONS	21	27	17	23	23
G PERFORMING INVASIVE CARDIOVASCULAR PROCEDURES	*	*	*	4	10
H PERFORMING NONINVASIVE CARDIOVASCULAR PROCEDURES	21	26	18	10	23
I PERFORMING PULMONARY LABORATORY PROCEDURES	14	13	8	6	6
J PERFORMING RESPIRATORY THERAPY	17	12	13	16	4
K PERFORMING MAINTENANCE AND CLEANING OF CARDIOPULMONARY EQUIPMENT	4	3	4	6	5

* Denotes less than 1 percent

TABLE 13 (CONTINUED)

DISTRIBUTION OF TIME SPENT ACROSS DUTIES BY MEMBERS OF MAJCOMs
(RELATIVE PERCENT OF JOB TIME SPENT)

DUTIES	ATC (N=16)	MAC (N=38)	PACAF (N=5)	SAC (N=18)	TAC (N=22)
A ORGANIZING AND PLANNING	6	6	4	5	6
B DIRECTING AND IMPLEMENTING	5	7	5	5	5
C INSPECTING AND EVALUATING	5	5	3	4	4
D TRAINING	6	7	4	5	3
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	9	12	11	13	13
F PERFORMING TASKS COMMON TO RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR FUNCTIONS	18	18	17	21	20
G PERFORMING INVASIVE CARDIOVASCULAR PROCEDURES	5	4	*	*	*
H PERFORMING NONINVASIVE CARDIOVASCULAR PROCEDURES	8	11	13	18	23
I PERFORMING PULMONARY LABORATORY PROCEDURES	4	7	11	11	9
J PERFORMING RESPIRATORY THERAPY	29	18	22	13	10
K PERFORMING MAINTENANCE AND CLEANING OF CARDIOPULMONARY EQUIPMENT	5	5	8	4	5

* Denotes less than 1 percent

TE data are used in conjunction with percent members performing figures to determine what tasks should be included in entry-level training. Tasks with high TE ratings and performed by moderate to high percentages of first-enlistment personnel are normally taught in resident courses, while tasks with high TE ratings and low percentages of first-enlistment personnel performing may be more appropriate for OJT. Tasks with low TE ratings are generally not included in any formal training, unless their inclusion can be justified by percent members performing, command concerns, or criticality.

Table 14 lists tasks with the highest TE ratings, with accompanying first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) percent members performing shown. These tasks are a mixture of common cardiopulmonary laboratory and respiratory therapy tasks in keeping with the two major jobs first-enlistment members have. All but two tasks are matched to both the STS and Phase II POI, and all but four are matched to the entry-level POI.

The Training Extract contains a listing of tasks sorted in descending order of TE, as well as listings of the STS and POI for each course, with accompanying tasks matched to elements and learning objectives, percent first-job, first-enlistment, 5- and 7-skill level members performing each matched task, and TE ratings. Copies of the extract have been forwarded to technical school personnel for their use in reviewing the training documents. The TRA, scheduled to be printed in December 1990, will also be sent to the technical school for use in reviewing training documents. A summary of OSR information is presented below.

First-Enlistment Cardiopulmonary Laboratory Personnel (AFSC 904X0)

Fifty-six respondents indicated they are in their first enlistment. As shown by Figure 2, 38 percent (or 21 of first-enlistment AFSC 904X0 personnel) have the Cardiopulmonary Laboratory job, and 32 percent (or 18 members) have the Respiratory Therapy job. The time members with these jobs spend on duties is shown in Table 15. First-enlistment members with the Cardiopulmonary Laboratory job spend 27 percent of their duty time performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions, 24 percent performing noninvasive cardiovascular functions, 14 percent performing respiratory therapy functions, 12 percent on pulmonary laboratory procedures, and 12 percent on administrative or supply functions. Representative tasks these members perform are listed in Table 16 and deal with noninvasive cardiology procedures and pulmonary functions.

First-enlistment members with the Respiratory Therapy job spend 63 percent of their duty time performing respiratory therapy and 18 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions. Representative tasks performed by these first-enlistment personnel are shown in Table 17. Nearly all tasks listed are related specifically to respiratory therapy procedures. The distinction between the two jobs is quite clearly seen by comparing the lists of representative tasks performed.

TABLE 14

SAMPLE OF TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1-24 TAFMS	1-48 TAFMS
F148	PERFORM ARTERIAL PUNCTURES	7.77	81	88
F144	INTERPRET ARRHYTHMIAS	7.60	50	55
F151	PERFORM CARDIOPULMONARY RESUSCITATION (CPR)	7.58	56	75
I252	ANALYZE BLOOD GAS STUDIES	7.39	56	54
J295	ADJUST VENTILATOR SETTINGS	7.28	69	80
J333	WEAN PATIENTS FROM VENTILATORS	7.05	44	68
J332	SET UP VOLUME VENTILATORS	6.89	56	73
H235	PERFORM EXERCISE STRESS TESTS	6.82	56	54
J328	SET UP PRESSURE VENTILATORS	6.67	38	66
H237	PERFORM TWO-DIMENSIONAL ECHOCARDIOGRAMS	6.65	25	27
J309	MONITOR BRONCHIAL DILATOR THERAPY	6.61	56	57
F153	PERFORM INFECTION CONTROL OR UNIVERSAL PRECAUTION PROCEDURES	6.58	19	46
I275	PERFORM FLOW/VOLUME LOOP TESTS	6.58	50	48
I277	PERFORM LUNG DIFFUSION TESTS	6.58	44	38
F145	MONITOR ECGs	6.56	50	54
F149	PERFORM BLOOD GAS QUALITY CONTROL PROCEDURES	6.56	31	46
H236	PERFORM M-MODE ECHOCARDIOGRAMS	6.56	25	27
J299	ASSIST PHYSICIAN IN PERFORMING INTUBATION PROCEDURES	6.54	50	52
F132	CALIBRATE BLOOD GAS ANALYZERS	6.53	32	45
J294	ADJUST RESPIRATORY THERAPY ALARMS	6.53	63	75
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	6.49	56	52
H233	PERFORM ECG TESTS	6.49	63	64
J329	SET UP RESPIRATORY THERAPY ALARMS	6.49	56	70
I276	PERFORM HELIUM DILUTION TESTS	6.47	25	27
J300	CALCULATE DOSAGE AND STRENGTHS OF RESPIRATORY THERAPY MEDICATIONS	6.46	38	52
H243	SCAN HOLTER-MONITORING TAPES FOR ABNORMALITIES	6.44	38	43
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	6.42	50	52
I281	PERFORM POSTBRONCHODILATOR STUDIES	6.40	63	52
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	6.39	69	80
J308	MAINTAIN OPEN AIRWAYS	6.33	50	46
F173	TAKE AND RECORD BLOOD PRESSURE	6.30	69	61
F156	PREPARE MEDICATIONS	6.28	75	70
I267	INSTRUCT PATIENTS IN LUNG DIFFUSION TESTS	6.26	50	51
J326	SET UP OXYGEN DELIVERY DEVICES	6.26	69	73
F123	ASSEMBLE EQUIPMENT FOR BLOOD GAS STUDIES	6.25	44	59
F143	INSTRUCT PATIENTS IN TREADMILL TEST PROCEDURES	6.25	44	52
F161	SET UP DEFIBRILLATORS	6.25	38	41

TE MEAN = 3.62; S.D. = 1.99

FIRST ASSIGNMENT AFSC 904X0
CAREER LADDER JOBS

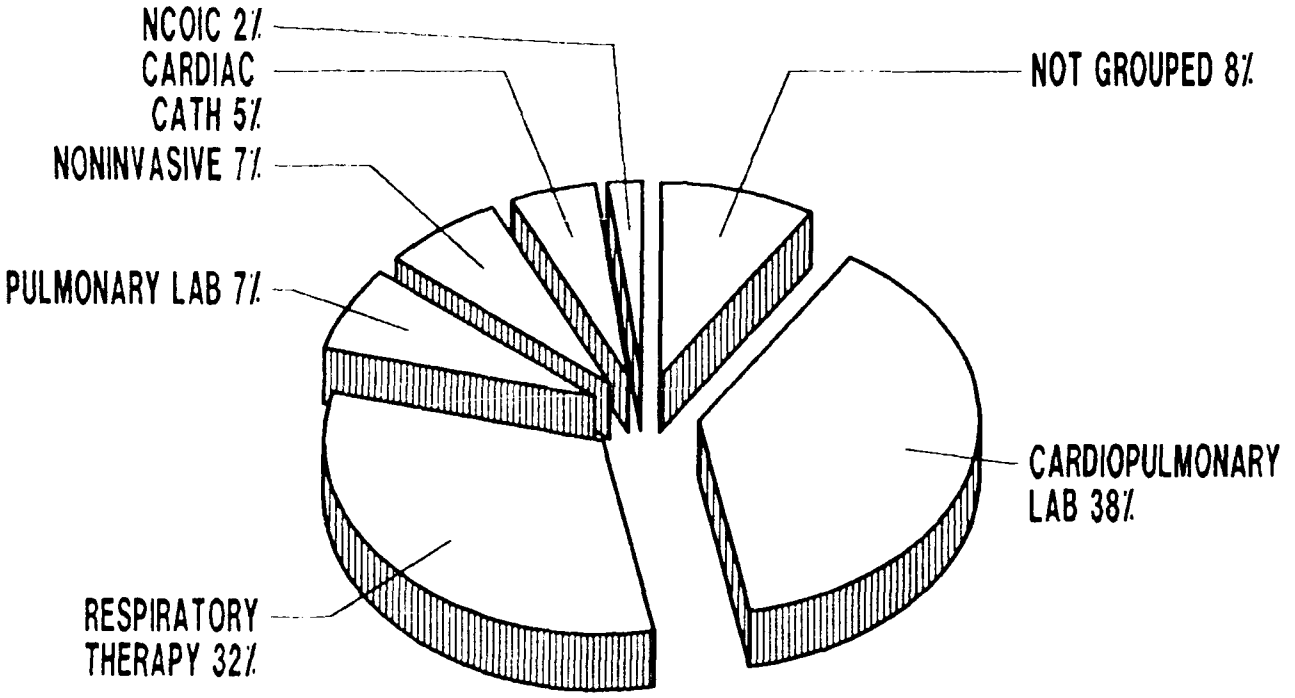

FIGURE 2

TABLE 15

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY FIRST-ENLISTMENT PERSONNEL WITH CARDIOPULMONARY LABORATORY AND RESPIRATORY THERAPY JOBS

DUTIES	CARDIO-PULMONARY (N=21)	RESP THERAPY (N=18)
A ORGANIZING AND PLANNING	1	2
B DIRECTING AND IMPLEMENTING	1	*
C INSPECTING AND EVALUATING	*	*
D TRAINING	*	*
E PERFORMING ADMINISTRATIVE OR SUPPLY FUNCTIONS	12	5
F PERFORMING TASKS COMMON TO RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR FUNCTIONS	27	18
G PERFORMING INVASIVE CARDIOVASCULAR PROCEDURES	*	2
H PERFORMING NONINVASIVE CARDIOVASCULAR PROCEDURES	24	*
I PERFORMING PULMONARY LABORATORY PROCEDURES	12	2
J PERFORMING RESPIRATORY THERAPY	14	63
K PERFORMING MAINTENANCE AND CLEANING OF CARDIOPULMONARY EQUIPMENT	6	7

* Denotes less than 1 percent

TABLE 16

REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT PERSONNEL WITH CARDIOPULMONARY LABORATORY JOB

TASKS		PERCENT MEMBERS PERFORMING (N=21)
H233	PERFORM ECG TESTS	100
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	100
H235	PERFORM EXERCISE STRESS TESTS	100
H242	PREPARE PATIENTS FOR HOLTER-MONITORING TESTS	100
H247	SET UP EXERCISE STRESS TESTS	100
F143	INSTRUCT PATIENTS IN TREADMILL TEST PROCEDURES	100
F148	PERFORM ARTERIAL PUNCTURES	100
F157	PREPARE PATIENTS FOR ECGs	95
F159	PREPARE PATIENTS FOR TREADMILL TESTS	95
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	95
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	95
H224	INSTRUCT PATIENTS IN ECG PROCEDURES	90
F169	SET UP TREADMILL EQUIPMENT	90
F173	TAKE AND RECORD BLOOD PRESSURE	90
I265	INSTRUCT PATIENTS IN FLOW/VOLUME LOOP TEST PROCEDURES	90
K337	INSPECT CARDIOPULMONARY EQUIPMENT	90
F122	ADMINISTER MEDICATIONS	90
J295	ADJUST VENTILATOR SETTINGS	90
H228	INSTRUCT PATIENTS IN USE OF HOLTER-MONITORING EQUIPMENT	86
H217	ATTACH HOLTER-MONITORING EQUIPMENT	86
H248	SET UP HOLTER-MONITORING EQUIPMENT, OTHER THAN SCANNERS	86
K336	DISINFECT NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	86
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	86
J331	SET UP STANDARD NEBULIZERS	86
K334	ASSEMBLE OR DISASSEMBLE NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	86
F139	DISPOSE OF CONTAMINATED MATERIALS	86
J330	SET UP STANDARD HUMIDIFIERS	86
E120	SCHEDULE PATIENTS FOR TREATMENTS	81
F123	ASSEMBLE EQUIPMENT FOR BLOOD GAS STUDIES	81
I281	PERFORM POSTBRONCHODILATOR STUDIES	81
H208	ASSESS AND REPORT HOLTER-MONITORING TESTS RESULTS TO PHYSICIAN	81
H206	ASSESS AND REPORT ECG TEST RESULTS TO PHYSICIAN	81

TABLE 17

REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT PERSONNEL WITH RESPIRATORY THERAPY JOB

TASKS		PERCENT MEMBERS PERFORMING (N=18)
J318	PERFORM ROUTINE VENTILATION CHECKS AND ADJUSTMENTS	100
J329	SET UP RESPIRATORY THERAPY ALARMS	100
J295	ADJUST VENTILATOR SETTINGS	100
J302	CONNECT FLOWMETERS	100
J331	SET UP STANDARD NEBULIZERS	100
J332	SET UP VOLUME VENTILATORS	100
J330	SET UP STANDARD HUMIDIFIERS	100
J319	PERFORM SUCTIONING PROCEDURES	100
J333	WEAN PATIENTS FROM VENTILATORS	100
J327	SET UP POSITIVE END EXPIRATORY PRESSURE (PEEP) DEVICES	100
J321	SET UP CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) DEVICES	100
J298	ASSIST PHYSICIAN IN PERFORMING EXTUBATION PROCEDURES	100
J326	SET UP OXYGEN DELIVERY DEVICES	94
J294	ADJUST RESPIRATORY THERAPY ALARMS	94
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	94
J328	SET UP PRESSURE VENTILATORS	94
J301	CALIBRATE OXYGEN ANALYZERS	94
J293	ADJUST OXYGEN BLENDER SETTINGS	94
J304	INSTRUCT PATIENTS IN BREATHING EXERCISES	94
F148	PERFORM ARTERIAL PUNCTURES	94
J324	SET UP IPPB EQUIPMENT	94
F151	PERFORM CARDIOPULMONARY RESUSCITATION (CPR)	94
J310	MONITOR IPPB TREATMENTS	94
J307	INSTRUCT PATIENTS IN USE OF IPPB DEVICES	94
J296	ADMINISTER INTERMITTENT POSITIVE PRESSURE BREATHING (IPPB) TREATMENTS	94
J320	RECORD PROGRESS OF RESPIRATORY THERAPY TREATMENT	89
J306	INSTRUCT PATIENTS IN USE OF INCENTIVE SPIROMETER	89
J323	SET UP INTERMITTENT MANDATORY VENTILATION (IMV) DEVICES	83
J308	MAINTAIN OPEN AIRWAYS	83
J303	CONNECT PRESSURE REGULATORS	83
F156	PREPARE MEDICATIONS	78
F122	ADMINISTER MEDICATIONS	72
J309	MONITOR BRONCHIAL DILATOR THERAPY	72

Table 18 lists equipment items used by more than 30 percent of all first-enlistment AFSC 904X0 personnel. These items are used to perform both cardiopulmonary and respiratory therapy procedures.

Specialty Training Standard (STS)

For the purposes of reviewing the Specialty Training Standard (STS), OMSQ personnel met with 3790th Medical Service Training Wing personnel at Sheppard AFB and Phase II training personnel at Wilford Hall Medical Center to match tasks listed in the job inventory to line items of the STS. The end product of the match was used to produce a listing of the STS with job inventory tasks matched, percent members performing the tasks, and TE ratings for each matched task. This listing is included in the Training Extract sent to the school for review. Criteria set forth in AFR 8-13, AFR 8-13/ATC Supplement 1 (Attachment 1, paragraph A1-3c(4)), and ATCR 52-22 Attachment 1, were used to review the relevance of each STS element that had inventory tasks matched to it.

AFSC 904X0 STS. Paragraphs 1 through 11 deal with general topics of career ladder progression, medical readiness, OPSEC, AFOSH, graduate evaluation, publications, medical logistics procedures, supervision, training, and cardiopulmonary laboratory administration, and were not reviewed. The technical aspects of the career ladder are included in paragraphs 12 through 18, most of which had tasks matched and were reviewed using both AFR 8-13 and ATCR 52-22 criteria.

Using these criteria, most elements in the STS with tasks matched are supported by survey data, meaning tasks matched are performed by more than 20 percent of first-job, first-enlistment, 5-, or 7-skill level members. Elements in paragraph 15 dealing with invasive procedures, however, are not supported. This is probably due to the specialized nature of the procedures and the relatively few AFSC 904X0 personnel that are part of a catheterization team. Three other elements dealing with static compliance body plethysmography, cardiac rehabilitation programs, and performing airway resistance are also not supported. These elements, with matched tasks and survey data are presented in Table 19. School personnel are directed to this table to determine if these unsupported elements should remain in the STS.

There are a number of technical tasks performed by more than 20 percent of criterion group members that are not matched to STS elements (Table 20). These tasks were reviewed to determine if they deal with a particular function or are related to a specific job. Some of these tasks are more administrative and are, therefore, performed by more 7-skill level members, while the rest deal with rather general procedures. Only two of the unmatched tasks, assemble equipment for blood gas studies and perform infection control, have high TE ratings. These tasks do not represent any function that should be included in the STS.

TABLE 18

EQUIPMENT ITEMS USED BY MORE THAN 30 PERCENT OF FIRST-ENLISTMENT AFSC 904X0 PERSONNEL

EQUIPMENT ITEMS	PERCENT MEMBERS USING (N=56)
HANDHELD NEBULIZERS	86
FLOW METERS	84
RESUSCITATION BAGS	84
HUMIDIFICATION DEVICES	80
VOLUME VENTILATORS	80
INCENTIVE SPIROMETER DEVICES	75
SPIROMETERS	73
BLOOD GAS ANALYZERS	71
SUCTION MACHINES	71
OXYGEN BLENDERS	68
COMPRESSORS	64
ECG MACHINES	63
ANALYZERS	61
DEFIBRILLATORS	61
NEGATIVE INSPIRATORY FORCE METERS	61
OXIMETERS	61
PRESSURE VENTILATORS	61
COMPUTERIZED PULMONARY FUNCTION ANALYZERS	61
TREADMILLS	59
HOLTER MONITOR EQUIPMENT	57
CPAP EQUIPMENT	54
PRESSURE REGULATORS	48
CO OXIMETERS	46
HOLTER MONITOR SCANNERS	46
CAPOC EQUIPMENT	43
BAROMETERS	41
RESPIROMETERS	41
DIFFUSION CAPACITY MEASUREMENT SYSTEM	39
ULTRASONIC NEBULIZERS	36

TABLE 19

UNSUPPORTED AFSC 904X0 STS ELEMENTS

		PERCENT MEMBERS PERFORMING			
	TNG EMP	1ST JOB	1ST ENL	5-LVL	7-LVL
15a(1). ARTERIOGRAPHY					
G179 ASSIST PHYSICIAN IN PERFORMING ARTERIOGRAPHS	3.00	6	5	6	7
G183 ASSIST PHYSICIAN IN PERFORMING HEART CATHETER INSERTIONS	3.44	6	7	9	10
15a(2). SHUNT DETECTION					
I256 ASSIST PHYSICIAN IN PERFORMING PULMONARY SHUNT STUDIES	3.35	0	2	2	12
G185 ASSIST PHYSICIAN IN PERFORMING SHUNT DETECTIONS	3.11	6	4	8	10
15a(3). ANGIOGRAPHY					
G177 ASSIST PHYSICIAN IN PERFORMING ANGIOGRAPHS	3.18	6	9	10	9
G183 ASSIST PHYSICIAN IN PERFORMING HEART CATHETER INSERTIONS	3.44		7	9	10
15a(4). HIS BUNDLE STUDIES					
G184 ASSIST PHYSICIAN IN PERFORMING HIS BUNDLE STUDIES	2.93	6	4	6	8
G183 ASSIST PHYSICIAN IN PERFORMING HEART CATHETER INSERTIONS	3.44	6	7	9	10
15a(5). STREPTOKINASE					
G186 ASSIST PHYSICIAN IN PERFORMING STREPTOKINASES	2.88	6	5	7	8
G183 ASSIST PHYSICIAN IN PERFORMING HEART CATHETER INSERTIONS	3.44	6	7	9	10

TABLE 19 (CONTINUED)

UNSUPPORTED AFSC 904X0 STS ELEMENTS

			PERCENT MEMBERS PERFORMING			
		TNG EMP	1ST JOB	1ST ENL	5-LVL	7-LVL
15a(6). ANGIOPLASTY						
G178	ASSIST PHYSICIAN IN PERFORMING ANGIOPLASTIES	3.25	6	4	4	8
G185	ASSIST PHYSICIAN IN PERFORMING SHUNT DETECTIONS	3.11	6	4	8	10
15a(10). STATIC COMPLIANCE BODY PLETHYSMOGRAPHY						
I263	INSTRUCT PATIENTS IN BODY PLETHYSMOGRAPH TESTS	5.25	13	9	5	14
I270	PERFORM BODY PLETHYSMOGRAPH TESTS	5.46	13	9	5	14
I288	SET UP BODY PLETHYSMOGRAPHS	4.91	13	9	5	14
15a(14). CARDIOLOGY REHABILITATION PROGRAMS						
H212	ASSIST PHYSICIAN IN PERFORMING CARDIAC REHABILITATION PROGRAM	2.18	0	0	1	2
H227	INSTRUCT PATIENTS IN PERMANENT PACEMAKER MONITORING PROCEDURES	3.32	0	4	4	9
H229	MONITOR ADMINISTRATIVE PROCEDURES PERTAINING TO COUMADIN CLINIC PATIENTS	1.68	0	2	2	3
17e. PERFORM AIRWAY RESISTANCE						
F130	CALCULATE AIRWAY RESISTANCE TEST RESULTS	3.75	13	13	10	9

TABLE 20

TECHNICAL TASKS PERFORMED BY MORE THAN 20 PERCENT CRITERION GROUP MEMBERS NOT MATCHED TO AFSC 904X0 STS

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	5-LVL	7-LVL
E89	INITIATE AF FORMS 765 (HOSPITAL INCIDENT STATEMENT)	2.12	0	4	10	29
E121	WRITE SPECIAL REPORTS, SUCH AS QUARTERLY REPORTS, OIs, STANDARD OPERATING PROCEDURES, AND HOSPITAL REGULATIONS	1.91	6	11	24	53
F123	ASSEMBLE EQUIPMENT FOR BLOOD GAS STUDIES	6.25	44	59	61	61
F136	COMPILE PHYSIOLOGICAL DATA FOR COMPUTER INPUT	2.95	19	14	16	22
F146	MONITOR PATIENTS WHILE TRANSPORTING WITHIN HOSPITAL	4.81	44	38	41	41
F153	PERFORM INFECTION CONTROL OR UNIVERSAL PRECAUTION PROCEDURES	6.58	19	46	53	65
F155	PERFORM PHYSIOLOGICAL DATA MONITORING	4.26	13	13	14	25
F160	RECORD PHYSIOLOGICAL MONITOR DATA	3.58	13	9	10	23
F163	SET UP OSCILLOSCOPES	2.18	13	9	10	21
I269	INSTRUCT PATIENTS IN PERFORMANCE OF VENTILATION STUDIES	4.65	13	20	22	24
K335	CLEAN PATIENT TREATMENT OR EXAMINATION ROOMS	3.93	44	48	50	46

TE MEAN = 2.63; S.D. = 1.99

Plans of Instruction (POI)

The same 3790 MSTW and Wilford Hall Medical Center personnel matched inventory tasks to learning objectives of both the entry-level Plan of Instruction (POI), dated 4 November 1987, and the Phase II POI, dated 16 February 1990. A computer product was created for each POI listing learning objectives, tasks matched, percent first-job and first-enlistment members performing, and TE ratings. Learning objectives with tasks matched were reviewed using criteria found in ATCR 55-22, Attachment 1 (February 1989). Any objective matched to tasks performed by 30 percent or more first-job or first-enlistment members is considered supported and should be part of the respective course.

ABR90430 POI. The entry-level course is designed to introduce the specialty and provide the students the basic knowledge they will need to complete the Phase II training in a hospital setting. Seventy-five of the 89 learning objectives, therefore, are written to the knowledge level, which requires students to identify facts related to subject materials or list steps in procedures. Only 14 objectives require performance. Because of this, only about half of the objectives are matched with inventory tasks, and there are many unmatched tasks. There are seven learning objectives not supported by survey data. These are I3b - Supply Issue and Turn-in, I6a and b - Publications, IV4d - Radionuclide studies, IV7b - Maximum Voluntary Ventilation, IV9a - Cardiology and Pulmonary Rehabilitation, and V5a - Document Patient's Respiratory Status. These objectives with matched tasks and survey data are listed in Table 21. Objective IV7b - Maximum Voluntary Ventilation, is also not supported in the Phase II POI. These data suggest this topic may not be appropriate for either POI. Objective IV9a - Cardiopulmonary Rehabilitation Programs, is not supported in the STS and may not be appropriate for either document.

Tasks performed by more than 30 percent first-job or first-enlistment personnel that are not matched to the entry-level POI are listed in Table 22. Most have high TE and are performed by high percentages of criterion group members. All but task K335 - clean patient and treatment or examination rooms, are matched to the Phase II POI and are taught in the hospital setting.

AZ090450 (PHASE II) POI. Once students complete the entry-level course, they immediately begin Phase II training at one of seven Air Force hospitals. This training differs from the entry-level course as students assist physicians working directly with patients to learn diagnostic and treatment procedures. Block I of the course includes the general topics of orientation, career ladder progression, security, AFOSH, professional and patient relationships, publications, medical logistics, administrations, and fundamentals of patient care, and were not reviewed. Blocks II through V deal with the technical aspects of the specialty, and most had inventory tasks matched.

There were eight learning objectives in blocks II through V that had tasks matched that are performed by less than 30 percent of first-job or first-enlistment AFSC 904X0 personnel. Two in Block II deal with invasive procedures, another in Block II deals with performing echocardiogram calculations, three in Block III deal with the topics of maximum voluntary

TABLE 21

UNSUPPORTED 3ABR90430 POI OBJECTIVES

LEARNING OBJECTIVE AND MATCHED TASKS	TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL
I3b. MATCH METHODS OF REQUESTING ISSUE/TURN-IN SUPPLIES AND EQUIPMENT WITH DESCRIPTIONS			
E88 INITIATE AF FORMS 1297 (TEMPORARY ISSUE RECEIPT)	1.96	13	16
E114 PREPARE REQUISITIONS FOR EQUIPMENT OR SUPPLIES	3.18	0	20
I6a. IDENTIFY THE TWO PRIMARY INDEXES USED BY CARDIOPULMONARY PERSONNEL TO LOCATE OFFICIAL PUBLICATIONS			
E112 MAINTAIN PUBLICATION FILES	.70	0	5
I6b. IDENTIFY BASIC TECHNIQUES FOR LOCATING INFORMATION IN OFFICIAL AND COMMERCIAL PUBLICATIONS			
E116 RESEARCH INDEXES TO LOCATE OFFICIAL PUBLICATIONS	.44	0	7
E117 RESEARCH OFFICIAL AND COMMERCIAL PUBLICATIONS	.56	0	2
IV4d. IDENTIFY BASIC FACTS ABOUT CONDUCTING RADIONUCLIDE STUDIES			
H215 ASSIST PHYSICIAN IN PERFORMING RADIONUCLIDE STUDIES	2.40	6	2
H216 ASSIST PHYSICIAN IN PERFORMING THALLIUM STUDIES	4.53	19	16
IV7b. IDENTIFY BASIC FACTS ABOUT PERFORMING MAXIMUM VOLUNTARY VENTILATION			
I269 INSTRUCT PATIENTS IN PERFORMANCE OF VENTILATION STUDIES	4.63	13	20
I279 PERFORM MAXIMUM VOLUNTARY VENTILATION	5.14	13	14
I285 PERFORM VENTILATION STUDIES	4.28	19	18

TE MEAN = 2.63; S.D. = 1.99

TABLE 21 (CONTINUED)

UNSUPPORTED 3ABR90430 POI OBJECTIVES

LEARNING OBJECTIVE AND MATCHED TASKS	TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL
IV9a. IDENTIFY RESPONSIBILITIES OF THE CARDIOPULMONARY TECHNICIAN IN CONDUCTING CARDIOLOGY AND PULMONARY REHABILITATION PROGRAMS			
H212 ASSIST PHYSICIAN IN PERFORMING CARDIAC REHABILITATION PROGRAM	2.18	0	0
I255 ASSIST PHYSICIAN IN PERFORMING PULMONARY REHABILITATION	2.93	19	14
V5a. IDENTIFY BASIC FACTS ABOUT DOCUMENTING A PATIENT'S RESPIRATORY STATUS			
E86 DOCUMENT PATIENT TREATMENT ON LOCAL FORMS	5.09	25	29

TE MEAN = 2.63; S.D. = 1.99

TABLE 22

TASKS PERFORMED BY MORE THAN 30 PERCENT CRITERION
GROUPS NOT MATCHED TO 3ABR90430 POI

TASKS NOT REFERENCED		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL
F134	CALIBRATE OXIMETERS	5.12	25	32
F149	PERFORM BLOOD GAS QUALITY CONTROL PROCEDURES	6.56	31	46
F164	SET UP OXIMETERS	4.28	31	41
F169	SET UP TREADMILL EQUIPMENT	5.98	44	52
F170	SET UP VIDEO EQUIPMENT	3.02	38	27
H217	ATTACH HOLTER-MONITORING EQUIPMENT	6.23	56	48
H242	PREPARE PATIENTS FOR HOLTER-MONITORING TESTS	6.07	50	54
H243	SCAN HOLTER-MONITORING TAPES FOR ABNORMALITIES	6.44	38	43
H248	SET UP HOLTER-MONITORING EQUIPMENT, OTHER THAN SCANNERS	5.74	44	43
H249	SET UP HOLTER-MONITORING SCANNERS	5.60	38	36
I283	PERFORM PULMONARY EXERCISE TESTING, OTHER THAN EXERCISE INDUCED ASTHMA TESTS	4.49	31	16
I290	SET UP LUNG DIFFUSION EQUIPMENT	5.53	44	32
J301	CALIBRATE OXYGEN ANALYZERS	6.18	56	66
J311	OBTAIN SPUTUM COLLECTIONS	4.74	25	46
J313	PERFORM CHEST PHYSIOTHERAPY	4.28	19	32
J315	PERFORM POSTURAL DRAINAGE	3.96	19	34
K334	ASSEMBLE OR DISASSEMBLE NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	5.63	56	68
K335	CLEAN PATIENT TREATMENT OR EXAMINATION ROOMS	3.93	44	48

TE MEAN = 3.62; S.D. = 1.99

ventilation, airway resistance measurement, and static compliance/body plethysmography, and one in Block V deals with operating monitoring units. Most of these topics are also not supported in the STS and appear to be rather specialized, as they are performed by low percentages of criterion group members. These unsupported learning objectives with matched tasks and survey data are listed in Table 23. Phase II training personnel need to review these objectives to determine if they should continue to be part of the Phase II curriculum.

Tasks performed by more than 30 percent of criterion group members that are not matched to the Phase II POI are listed in Table 24. These are very general tasks and are steps in various procedures.

Summary

Most portions of the STS dealing with technical topics and most of the Phase II POI have tasks matched, and are supported by survey data using criteria set forth in AFR 8-13/ATC Sup 1 and ATCR 52-22, Atch 1. About half of the entry-level POI is matched, and most matched objectives are supported. There are several unsupported objectives in the entry-level course that should be reviewed by school personnel, and several unsupported objectives in the Phase II POI that are also unsupported in the STS and should be reviewed to determine if they should remain in both documents.

JOB SATISFACTION

Respondents were asked to indicate how interested they are in their jobs, if they feel their talents and training are being used, and if they intend to reenlist. Satisfaction indicators for TAFMS groups in the present study were compared to those of members of related AFSCs surveyed in 1989 (Table 25). Job interest and perceived use of talents are higher for members of this career ladder compared to the comparative sample, while perceived use of training and reenlistment intentions are about the same.

Satisfaction indicators for TAFMS groups in the present study were also compared to figures reported in the previous OSR (Table 26). Job interest and use of talents and training are higher for the present study than the previous OSR. Enlistment intentions, however, are noticeably lower, due perhaps to employment opportunities for trained cardiopulmonary personnel in the civilian community.

Satisfaction indicators for members of the various jobs are shown in Table 27. Personnel with the Cardiac Catheterization and Respiratory Therapy jobs express the highest job interest and feel their talents and training are used best. Fewer with the Noninvasive Cardiology job find their job interesting and feel their training is used. Superintendents as a group feel their training is least used, which is understandable, as they do not provide patient care, but handle paperwork and manage personnel.

TABLE 23

UNSUPPORTED 5AJZ90450 POI OBJECTIVES

LEARNING OBJECTIVE AND MATCHED TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL
II4B.	PERFORM ECHOCARDIOGRAPHIC CALCULATIONS			
H207	ASSESS AND REPORT ECHOCARDIOGRAM TEST RESULTS TO PHYSICIAN	5.72	13	20
H218	CALCULATE ECHOCARDIOGRAMS	5.65	13	14
II 8a.	IDENTIFY GUIDELINES AND PROCEDURES TO ASSIST THE CARDIAC CATHETERIZATION TEAM PERFORM ARTERIOGRAPHY, SHUNT DETECTION, ANGIOGRAPHY, HIS BUNDLE STUDIES, AND STREPTOKINASE STUDIES			
G177	ASSIST PHYSICIAN IN PERFORMING ANGIOGRAPHS	3.18	6	9
G178	ASSIST PHYSICIAN IN PERFORMING ANGIOPLASTIES	3.25	6	4
G179	ASSIST PHYSICIAN IN PERFORMING ARTERIOGRAPHS	3.00	6	5
G180	ASSIST PHYSICIAN IN PERFORMING AV NODAL ABLATIONS	2.47	6	2
G181	ASSIST PHYSICIAN IN PERFORMING BALLOON PUMP INSERTIONS	2.98	6	5
G183	ASSIST PHYSICIAN IN PERFORMING HEART CATHETER INSERTIONS	3.44	6	7
G184	ASSIST PHYSICIAN IN PERFORMING HIS BUNDLE STUDIES	2.93	6	4
G185	ASSIST PHYSICIAN IN PERFORMING SHUNT DETECTIONS	3.11	6	4
G186	ASSIST PHYSICIAN IN PERFORMING STREPTOKINASES	2.88	6	5
II 8b.	IDENTIFY BASIC PROCEDURES FOR PERFORMING ANGIOPLASTY			
G178	ASSIST PHYSICIAN IN PERFORMING ANGIOPLASTIES	3.25	6	4
G185	ASSIST PHYSICIAN IN PERFORMING SHUNT DETECTIONS	3.11	6	4
III 4.	COMPLETE A MAXIMUM VOLUNTARY VENTILATION TEST			
I279	PERFORM MAXIMUM VOLUNTARY VENTILATION	5.14	13	14

TE MEAN = 3.62; S.D. = 1.99

TABLE 23 (CONTINUED)

UNSUPPORTED 5AJZ90450 POI OBJECTIVES

LEARNING OBJECTIVE AND MATCHED TASKS	TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL
III 9. IDENTIFY BASIC PROCEDURES TO MEASURE AIRWAY RESISTANCE			
F130 CALCULATE AIRWAY RESISTANCE TEST RESULTS	3.75	13	13
III9a. IDENTIFY BASIC PROCEDURES TO MEASURE AIRWAY RESISTANCE			
F130 CALCULATE AIRWAY RESISTANCE TEST RESULTS	3.75	13	13
III 12a. IDENTIFY PROCEDURES FOR MEASURING STATIC COMPLIANCE USING BODY PLETHYSMOGRAPHY			
I263 INSTRUCT PATIENTS IN BODY PLETHYSMOGRAPH TESTS	5.25	13	9
I270 PERFORM BODY PLETHYSMOGRAPH TESTS	5.46	13	9
I288 SET UP BODY PLETHYSMOGRAPHS	4.91	13	9
IV 1a(4). OPERATE MONITORING UNITS			
F155 PERFORM PHYSIOLOGICAL DATA MONITORING	4.26	13	13
F166 SET UP PHYSIOLOGICAL RECORDING MONITORS	3.63	13	11
G187 ATTACH ECG LEADS TO PHYSIOLOGICAL MONITORING DEVICES	3.63	25	23

TE MEAN = 3.62; S.D. = 1.99

TABLE 24

TASKS PERFORMED BY MORE THAN 30 PERCENT CRITERION
GROUPS NOT MATCHED TO 5AJZ90450 POI

TASKS NOT REFERENCED		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL
F146	MONITOR PATIENTS WHILE TRANSPORTING WITHIN HOSPITAL	4.81	44	38
F173	TAKE AND RECORD BLOOD PRESSURE	6.30	69	61
F174	TAKE AND RECORD VITAL SIGNS, SUCH AS PULSE RESPIRATION OR TEMPERATURE, OTHER THAN BLOOD PRESSURE	5.51	70	66
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	5.88	56	50
H247	SET UP EXERCISE STRESS TESTS	6.25	56	54
K335	CLEAN PATIENT TREATMENT OR EXAMINATION ROOMS	3.93	44	48

TE MEAN = 3.62; S.D. = 1.99

TABLE 25

COMPARISON OF JOB SATISFACTION INDICATORS FOR 904X0 TAFMS GROUPS IN CURRENT STUDY TO A COMPARATIVE SAMPLE (PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	904X0 (N=56)	COMP SAMPLE (N=2,167)	904X0 (N=61)	COMP SAMPLE (N=1,393)	904X0 (N=88)	COMP SAMPLE (N=1,513)
EXPRESSED JOB INTEREST:						
INTERESTING	84	70	92	69	80	74
SO-SO	5	17	3	18	14	16
DULL	11	13	5	12	5	10
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO GOOD	84	75	90	79	83	80
LITTLE OR NOT AT ALL	16	24	10	20	17	19
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO GOOD	82	84	75	81	86	80
LITTLE OR NOT AT ALL	18	15	15	18	14	20
REENLISTMENT INTENTIONS:						
WILL REENLIST	54	58	62	66	52	73
WILL NOT REENLIST	46	40	36	32	12	9
WILL RETIRE	0	*	2	*	35	17

* Denotes less than 1 percent
NOTE: Comparative data are from AFSCs 906X0, 924X0, and 981X0 surveyed in 1989

TABLE 26

COMPARISON OF JOB SATISFACTION INDICATORS FOR AFSC 904X0
TAFMS GROUPS IN CURRENT AND PREVIOUS STUDIES
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	1990 (N=56)	1983 (N=59)	1990 (N=61)	1983 (N=41)	1990 (N=88)	1983 (N=39)
EXPRESSED JOB INTEREST:						
INTERESTING	84	76	92	85	80	82
SO-SO	5	12	3	2	14	5
DULL	11	10	5	10	5	8
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO GOOD	84	75	90	73	83	85
LITTLE OR NOT AT ALL	16	24	10	24	17	15
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO GOOD	82	73	75	71	86	82
LITTLE OR NOT AT ALL	18	24	15	24	14	18
REENLISTMENT INTENTIONS:						
WILL REENLIST	54	76	62	81	52	72
WILL NOT REENLIST	46	20	36	7	12	10
WILL RETIRE	0	2	2	12	35	18

TABLE 27

COMPARISON OF JOB SATISFACTION INDICATORS FOR MEMBERS OF 904X0 SPECIALTY JOBS
(PERCENT MEMBERS RESPONDING)

	CARDIO-PULMONARY LAB (N=54)	PULMONARY LAB (N=13)	NONINV CARDIO (N=19)	NCOIC (N=34)	RESP THPY (N=43)	CATH LAB (N=14)	INSTR (N=6)	SUPT (N=7)
EXPRESSED JOB INTEREST:								
INTERESTING	80	84	75	85	91	100	83	86
SO-SO	15	8	6	6	2	0	17	14
DULL	5	8	19	6	7	0	0	0
PERCEIVED USE OF TALENTS:								
FAIRLY WELL TO GOOD	83	85	81	82	91	100	83	86
LITTLE OR NOT AT ALL	17	15	19	18	9	0	17	14
PERCEIVED USE OF TRAINING:								
FAIRLY WELL TO GOOD	76	100	75	97	86	86	100	57
LITTLE TO NOT AT ALL	24	0	25	3	14	14	0	43
REENLISTMENT INTENTIONS:								
WILL REENLIST	52	46	50	53	63	86	67	43
WILL NOT REENLIST	37	38	38	18	30	14	33	14
WILL RETIRE	11	15	6	29	7	0	0	43

Summary

Satisfaction of AFSC 904X0 personnel and members of similar AFSCs surveyed in 1989 were compared, and data show AFSC 904X0 personnel have somewhat higher satisfaction indicators than their counterparts in other AFSCs. Overall satisfaction has improved somewhat over the years. Reenlistment intentions, on the other hand, are down noticeably for members of all TAFMS groups. Members of most jobs find their work interesting and feel their talents and training are used. Those with the Cardiac Catheterization and Respiratory Therapy jobs have the highest overall indicators, while those with the Noninvasive Cardiology job have the lowest indicators.

SPECIAL ISSUES

Training and functional personnel are interested in how much time AFSC 904X0 personnel spend operating computerized laboratory equipment, the areas members worked the previous year, and the size of laboratory or unit the members are assigned to. These questions will be answered individually below.

Time Spent Using Computerized Equipment

Data in Table 28 show, while all AFSC 904X0 personnel, except Superintendents, use computerized laboratory equipment, members with the Cardiac Catheterization job spend more time than members with the other jobs. This is due to the specialized equipment involved with the invasive procedures.

Other Areas Worked the Previous Year

Survey data show there is quite a degree of specialization in the career ladder (see Table 29). The Cardiac Catheterization job appears to be the most specialized, operating on a team concept, and having fewer members of other technical jobs rotating in. Most personnel with the Respiratory Therapy job spent their last year in that one job, as did members with the Pulmonary Laboratory and Noninvasive jobs. Members with the Cardiopulmonary Laboratory job, on the other hand, report they had experience in all areas.

Size of Unit Assigned To

Table 30 displays the number of AFSC 904X0 personnel assigned to units and the percentages of members in those units. Respiratory Therapy laboratories appear to have the largest numbers assigned, while all other units have between two and six members. There are relatively few members that are in one-deep positions. Survey data also show all Respiratory Therapy personnel

TABLE 28

PERCENTAGE OF MEMBERS IN SPECIALTY JOBS USING COMPUTERIZED LABORATORY EQUIPMENT

HOURS PER DAY	CARDIO-PULMONARY LAB (N=54)	PULMONARY LAB (N=13)	NONINV CARDIO (N=16)	NCOIC (N=34)	RESP THERAPY (N=43)	CARDIAC CATH (N=14)	INSTR (N=6)	SUPT (N=7)
NONE	0	0	0	0	21	0	0	57
LESS THAN 1 HOUR	4	0	6	9	16	0	43	29
1-2 HOURS	11	8	0	3	7	7	0	14
2-4 HOURS	19	15	25	18	7	7	43	0
4-6 HOURS	24	31	25	29	19	7	14	0
6-8 HOURS	28	31	25	24	5	33	0	0
MORE THAN 8 HOURS	15	15	19	18	23	47	0	0

TABLE 29

DUTY AREA ASSIGNED TO DURING LAST YEAR
(PERCENT RESPONDING)

DUTY AREA	CARDIO-PULMONARY LAB (N=54)	PULMONARY LAB (N=13)	NONINV CARDIO (N=16)	NCOIC (N=34)	RESP THERAPY (N=43)	CARDIAC CATH (N=14)	INSTR (N=6)	SUPT (N=7)
CARDIAC CATHETERIZATION	4	0	13	9	14	100	57	0
NONINVASIVE CARDIOLOGY	100	38	100	91	16	40	71	14
PULMONARY LABORATORY	96	100	50	79	12	0	71	43
RESPIRATORY THERAPY	96	77	50	91	100	27	57	43

TABLE 30

SIZE OF UNIT AND TYPE OF FACILITY ASSIGNED TO
(PERCENT RESPONDING)

NUMBER IN UNIT	CARDIO-PULMONARY LAB (N=54)	PULMONARY LAB (N=13)	NONINV CARDIO (N=16)	NCOIC (N=34)	RESP THERAPY (N=43)	CARDIAC CATH (N=14)	INSTR (N=6)	SUPT (N=7)
1	2	8	6	3	2	0	0	14
2-3	35	38	31	15	0	7	0	0
4-6	44	8	19	35	2	67	43	0
7-10	17	15	25	15	9	7	0	0
10+	2	31	19	32	81	20	57	86
TYPE OF FACILITY								
CLINIC	2	0	0	3	0	0	0	0
NONREGIONAL HOSPITAL	56	0	31	21	0	0	0	0
MEDICAL CENTER	7	77	50	44	100	86	50	86
REGIONAL HOSPITAL	35	15	6	29	0	0	0	0
OTHER	0	0	13	0	0	14	50	14

and most Cardiac Catheterization and Pulmonary Laboratory personnel work in a medical center. Very few AFSC 904X0 personnel report being assigned to a clinic.

Summary

Survey data show most Cardiopulmonary Laboratory personnel use computerized laboratory equipment. There is also quite a bit of specialization in the career ladder, as members do not rotate through other job areas very much. The Cardiac Catheterization and Respiratory Therapy jobs are quite separate from other Cardiopulmonary jobs. Most AFSC 904X0 personnel work in a medical center, with very few assigned to a clinic.

IMPLICATIONS

Overall, there have been few changes in the structure of the career ladder over the last 7 years. Personnel progress typically through the career ladder, with 5-skill level members performing the common cardiopulmonary functions, 7-skill level members performing a mixture of technical and supervisory functions, and 9-skill level members performing more career ladder management tasks. Survey data show the AFR 39-1 Specialty Descriptions accurately reflect the jobs and tasks currently being performed in the career ladder.

Job satisfaction indicators for this specialty are somewhat higher than those of related AFSCs surveyed in 1989. Overall satisfaction has improved somewhat over the years, even though reenlistment intentions are noticeably lower than before. Members of most jobs report they find their job interesting and feel their talents and training are used, however, those with the Noninvasive Cardiology job have the lowest satisfaction indicators.

Most of the STS and Phase II POI are matched to tasks and are supported by survey data. STS elements and Phase II objectives dealing with some invasive procedures are not supported in either document. This may be due to the low number of AFSC 904X0 personnel working on cardiac catheterization teams. About half the entry-level POI is matched to tasks, and only seven objectives are not supported. School personnel need to review these unsupported topics to determine if they should remain in the STS and POIs.

Survey data also show most AFSC 904X0 personnel use computerized laboratory equipment in their jobs, tend to specialize in one job, and are assigned to CONUS medical centers.

APPENDIX A

SELECTED REFRESENTATIVE TASKS PERFORMED BY MEMBERS OF CAREER LADDER JOBS

TABLE A1

CARDIOPULMONARY CLUSTER (STG020)

NUMBER IN GROUP: 103 AVERAGE TIME IN JOB: 44 MONTHS

PERCENT OF SAMPLE: 51% AVERAGE TAFMS: 116 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
F148	PERFORM ARTERIAL PUNCTURES	96
F122	ADMINISTER MEDICATIONS	93
F159	PREPARE PATIENTS FOR TREADMILL TESTS	89
K337	INSPECT CARDIOPULMONARY EQUIPMENT	89
H233	PERFORM ECG TESTS	88
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	87
F173	TAKE AND RECORD BLOOD PRESSURE	87
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	86
F143	INSTRUCT PATIENTS IN TREADMILL TEST PROCEDURES	86
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	86
F169	SET UP TREADMILL EQUIPMENT	85
H235	PERFORM EXERCISE STRESS TESTS	84
I265	INSTRUCT PATIENTS IN FLOW/VOLUME LOOP TEST PROCEDURES	84
I281	PERFORM POSTBRONCHODILATOR STUDIES	84
F123	ASSEMBLE EQUIPMENT FOR BLOOD GAS STUDIES	84
F157	PREPARE PATIENTS FOR ECGs	83
H247	SET UP EXERCISE STRESS TESTS	82
H242	PREPARE PATIENTS FOR HOLTER-MONITORING TESTS	82
H217	ATTACH HOLTER-MONITORING EQUIPMENT	82
H224	INSTRUCT PATIENTS IN ECG PROCEDURES	81
I275	PERFORM FLOW/VOLUME LOOP TESTS	81
I252	ANALYZE BLOOD GAS STUDIES	81
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	79
H228	INSTRUCT PATIENTS IN USE OF HOLTER-MONITORING EQUIPMENT	78
E92	INITIATE OR ANNOTATE PULMONARY REQUEST FORMS	78
F145	MONITOR ECGs	78
H206	ASSESS AND REPORT ECG TEST RESULTS TO PHYSICIAN	75
H248	SET UP HOLTER-MONITORING EQUIPMENT, OTHER THAN SCANNERS	73
E120	SCHEDULE PATIENTS FOR TREATMENTS	73
H208	ASSESS AND REPORT HOLTER-MONITORING TESTS RESULTS TO PHYSICIAN	73
E84	COMPLETE TREADMILL REPORT FORMS	69
H243	SCAN HOLTER-MONITORING TAPES FOR ABNORMALITIES	66
F149	PERFORM BLOOD GAS QUALITY CONTROL PROCEDURES	66

TABLE A1(A)

CARDIOPULMONARY LABORATORY JOB (STG033)

NUMBER IN GROUP: 54 AVERAGE TIME IN JOB: 45 MONTHS

PERCENT OF SAMPLE: 27% AVERAGE TAFMS: 87 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
F148	PERFORM ARTERIAL PUNCTURES	100
H233	PERFORM ECG TESTS	98
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	98
F159	PREPARE PATIENTS FOR TREADMILL TESTS	98
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	98
F143	INSTRUCT PATIENTS IN TREADMILL TEST PROCEDURES	98
H235	PERFORM EXERCISE STRESS TESTS	96
H242	PREPARE PATIENTS FOR HOLTER-MONITORING TESTS	96
H247	SET UP EXERCISE STRESS TESTS	96
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	94
H217	ATTACH HOLTER-MONITORING EQUIPMENT	94
F169	SET UP TREADMILL EQUIPMENT	94
F122	ADMINISTER MEDICATIONS	94
H224	INSTRUCT PATIENTS IN ECG PROCEDURES	93
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	93
F157	PREPARE PATIENTS FOR ECGs	91
F173	TAKE AND RECORD BLOOD PRESSURE	91
K337	INSPECT CARDIOPULMONARY EQUIPMENT	91
H228	INSTRUCT PATIENTS IN USE OF HOLTER-MONITORING EQUIPMENT	89
I265	INSTRUCT PATIENTS IN FLOW/VOLUME LOOP TEST PROCEDURES	89
I281	PERFORM POSTBRONCHODILATOR STUDIES	89
F123	ASSEMBLE EQUIPMENT FOR BLOOD GAS STUDIES	87
H248	SET UP HOLTER-MONITORING EQUIPMENT, OTHER THAN SCANNERS	85
E92	INITIATE OR ANNOTATE PULMONARY REQUEST FORMS	83
H208	ASSESS AND REPORT HOLTER-MONITORING TESTS RESULTS TO PHYSICIAN	83
H206	ASSESS AND REPORT ECG TEST RESULTS TO PHYSICIAN	83
E84	COMPLETE TREADMILL REPORT FORMS	81
I275	PERFORM FLOW/VOLUME LOOP TESTS	81
K341	REMOVE OR REPLACE CARDIOPULMONARY EQUIPMENT COMPONENTS, SUCH AS ELECTRODES, FILTERS, FUSES, OR BULBS	81
K336	DISINFECT NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	81
J331	SET UP STANDARD NEBULIZERS	81

TABLE A1(B)

PULMONARY LABORATORY JOB (STG022)

NUMBER IN GROUP: 13 AVERAGE TIME IN JOB: 42 MONTHS

PERCENT OF SAMPLE: 6% AVERAGE TAFMS: 121 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
I275	PERFORM FLOW/VOLUME LOOP TESTS	100
F148	PERFORM ARTERIAL PUNCTURES	100
I281	PERFORM POSTBRONCHODILATOR STUDIES	100
I265	INSTRUCT PATIENTS IN FLOW/VOLUME LOOP TEST PROCEDURES	100
I277	PERFORM LUNG DIFFUSION TESTS	100
I267	INSTRUCT PATIENTS IN LUNG DIFFUSION TESTS	100
I290	SET UP LUNG DIFFUSION EQUIPMENT	100
I289	SET UP BRONCHOSCOPY EQUIPMENT	100
F122	ADMINISTER MEDICATIONS	100
I270	PERFORM BODY PLETHYSMOGRAPH TESTS	100
I263	INSTRUCT PATIENTS IN BODY PLETHYSMOGRAPH TESTS	100
I288	SET UP BODY PLETHYSMOGRAPHS	100
E92	INITIATE OR ANNOTATE PULMONARY REQUEST FORMS	92
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	92
I253	ASSIST PHYSICIAN IN PERFORMING BRONCHOSCOPIES	92
F123	ASSEMBLE EQUIPMENT FOR BLOOD GAS STUDIES	92
I276	PERFORM HELIUM DILUTION TESTS	85
F149	PERFORM BLOOD GAS QUALITY CONTROL PROCEDURES	85
I252	ANALYZE BLOOD GAS STUDIES	85
I258	CALCULATE FLOW/VOLUME LOOP TEST RESULTS	85
F168	SET UP SPIROMETERS	85
I259	CALCULATE LUNG DIFFUSION TEST RESULTS	85
F132	CALIBRATE BLOOD GAS ANALYZERS	85
I273	PERFORM EXERCISE INDUCED ASTHMA TESTS	85
I283	PERFORM PULMONARY EXERCISE TESTING, OTHER THAN EXERCISE INDUCED ASTHMA TESTS	85
I282	PERFORM PRE- AND POSTEXERCISE BLOOD GAS STUDIES	85
I266	INSTRUCT PATIENTS IN HELIUM DILUTION TESTS	77
D55	CONDUCT PHASE II TRAINING, OTHER THAN CLASSROOM TRAINING	77
F152	PERFORM CO OXIMETER TESTS	77
J309	MONITOR BRONCHIAL DILATOR THERAPY	77
I286	PREPARE BIOPSIES FOR LABORATORY	77
F133	CALIBRATE CO OXIMETERS	77

TABLE A1(C)

NONINVASIVE CARDIOLOGY JOB (STG019)

NUMBER IN GROUP: 16 AVERAGE TIME IN JOB: 48 MONTHS

PERCENT OF SAMPLE: 8% AVERAGE TAFMS: 107 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
H217	ATTACH HOLTER-MONITORING EQUIPMENT	100
F143	INSTRUCT PATIENTS IN TREADMILL TEST PROCEDURES	100
F169	SET UP TREADMILL EQUIPMENT	100
H233	PERFORM ECG TESTS	94
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	94
H208	ASSESS AND REPORT HOLTER-MONITORING TESTS RESULTS TO PHYSICIAN	94
H228	INSTRUCT PATIENTS IN USE OF HOLTER-MONITORING EQUIPMENT	94
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	94
F157	PREPARE PATIENTS FOR ECGs	94
H224	INSTRUCT PATIENTS IN ECG PROCEDURES	94
H248	SET UP HOLTER-MONITORING EQUIPMENT, OTHER THAN SCANNERS	94
H243	SCAN HOLTER-MONITORING TAPES FOR ABNORMALITIES	88
F159	PREPARE PATIENTS FOR TREADMILL TESTS	88
F173	TAKE AND RECORD BLOOD PRESSURE	88
H242	PREPARE PATIENTS FOR HOLTER-MONITORING TESTS	88
H247	SET UP EXERCISE STRESS TESTS	88
H249	SET UP HOLTER-MONITORING SCANNERS	88
F144	INTERPRET ARRHYTHMIAS	88
H235	PERFORM EXERCISE STRESS TESTS	81
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	81
F145	MONITOR ECGs	81
F141	DOCUMENT TREADMILL TEST RESULTS	75
E84	COMPLETE TREADMILL REPORT FORMS	75
K335	CLEAN PATIENT TREATMENT OR EXAMINATION ROOMS	63
E83	ANNOTATE SF FORMS 520 (CLINICAL RECORD - ELECTROCARDIOGRAPHIC RECORD)	62
I255	ASSIST PHYSICIAN IN PERFORMING PULMONARY REHABILITATION	56
H240	PREPARE PATIENTS FOR ECHOCARDIOGRAMS	56
H207	ASSESS AND REPORT ECHOCARDIOGRAM TEST RESULTS TO PHYSICIAN	50
H218	CALCULATE ECHOCARDIOGRAMS	50
H244	SET UP ECHOCARDIOGRAPH MACHINES	50
H237	PERFORM TWO-DIMENSIONAL ECHOCARDIOGRAMS	44
H231	PERFORM CARDIAC DOPPLER ECHOCARDIOGRAMS	44
H232	PERFORM COLOR DOPPLER ECHOCARDIOGRAMS	44

TABLE A1(D)

NCOIC JOB (STG035)

NUMBER IN GROUP: 34 AVERAGE TIME IN JOB: 43 MONTHS

PERCENT OF SAMPLE: 17% AVERAGE TAFMS: 169 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
A5	DETERMINE WORK PRIORITIES	100
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	100
B28	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	100
A3	COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS	100
C41	EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	97
C49	WRITE EPRs	97
B24	DIRECT MAINTENANCE OR UTILIZATION OF EQUIPMENT AND SUPPLIES	97
A4	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	97
C40	EVALUATE PATIENT CARE	94
A15	PLAN OR SCHEDULE WORK PRIORITIES	94
A14	PLAN OR SCHEDULE WORK ASSIGNMENTS	94
B31	SUPERVISE CARDIOPULMONARY LABORATORY SPECIALISTS (AFSC 90450)	91
E121	WRITE SPECIAL REPORTS, SUCH AS QUARTERLY REPORTS, OIs, STANDARD OPERATING PROCEDURES, AND HOSPITAL REGULATIONS	91
A10	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	91
F145	MONITOR ECGs	91
F159	PREPARE PATIENTS FOR TREADMILL TESTS	91
E85	COORDINATE PURCHASE OF SPECIAL EQUIPMENT OR MEDICAL SUPPLIES WITH MEDICAL MATERIEL PERSONNEL OR VENDORS	91
E114	PREPARE REQUISITIONS FOR EQUIPMENT OR SUPPLIES	91
F173	TAKE AND RECORD BLOOD PRESSURE	91
H233	PERFORM ECG TESTS	88
H226	INSTRUCT PATIENTS IN EXERCISE STRESS TESTS	88
F144	INTERPRET ARRHYTHMIAS	88
F141	DOCUMENT TREADMILL TEST RESULTS	88
H235	PERFORM EXERCISE STRESS TESTS	85
H206	ASSESS AND REPORT ECG TEST RESULTS TO PHYSICIAN	85
F129	ASSIST PHYSICIAN IN PERFORMING TREADMILL TESTS	85
F143	INSTRUCT PATIENTS IN TREADMILL TEST PROCEDURES	85
H241	PREPARE PATIENTS FOR EXERCISE STRESS TESTS	82

TABLE A2

RESPIRATORY THERAPY JOB (STG024)

NUMBER IN GROUP: 34 AVERAGE TIME IN JOB: 34 MONTHS

PERCENT OF SAMPLE: 17% AVERAGE TAFMS: 78 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
J295	ADJUST VENTILATOR SETTINGS	100
J329	SET UP RESPIRATORY THERAPY ALARMS	100
J333	WEAN PATIENTS FROM VENTILATORS	100
J302	CONNECT FLOWMETERS	100
J326	SET UP OXYGEN DELIVERY DEVICES	98
J294	ADJUST RESPIRATORY THERAPY ALARMS	98
J293	ADJUST OXYGEN BLENDER SETTINGS	98
J301	CALIBRATE OXYGEN ANALYZERS	98
J318	PERFORM ROUTINE VENTILATION CHECKS AND ADJUSTMENTS	95
J331	SET UP STANDARD NEBULIZERS	95
J330	SET UP STANDARD HUMIDIFIERS	95
J328	SET UP PRESSURE VENTILATORS	95
J319	PERFORM SUCTIONING PROCEDURES	95
J321	SET UP CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) DEVICES	95
J332	SET UP VOLUME VENTILATORS	93
F148	PERFORM ARTERIAL PUNCTURES	93
J305	INSTRUCT PATIENTS IN USE OF HANDHELD OR UPDRAFT NEBULIZERS	91
J303	CONNECT PRESSURE REGULATORS	91
J306	INSTRUCT PATIENTS IN USE OF INCENTIVE SPIROMETER	88
J327	SET UP POSITIVE END EXPIRATORY PRESSURE (PEEP) DEVICES	86
J304	INSTRUCT PATIENTS IN BREATHING EXERCISES	86
J320	RECORD PROGRESS OF RESPIRATORY THERAPY TREATMENT	84
J323	SET UP INTERMITTENT MANDATORY VENTILATION (IMV) DEVICES	81
J308	MAINTAIN OPEN AIRWAYS	81
J309	MONITOR BRONCHIAL DILATOR THERAPY	79
F156	PREPARE MEDICATIONS	79
F122	ADMINISTER MEDICATIONS	77
K334	ASSEMBLE OR DISASSEMBLE NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	77
J300	CALCULATE DOSAGE AND STRENGTHS OF RESPIRATORY THERAPY MEDICATIONS	70
E93	INITIATE OR ANNOTATE VENTILATION SETTING FORMS	67
F153	PERFORM INFECTION CONTROL OR UNIVERSAL PRECAUTION PROCEDURES	60
J298	ASSIST PHYSICIAN IN PERFORMING EXTUBATION PROCEDURES	00

TABLE A3

CARDIAC CATHETERIZATION JOB (STG032)

NUMBER IN GROUP: 14 AVERAGE TIME IN JOB: 29 MONTHS

PERCENT OF SAMPLE: 7% AVERAGE TAFMS: 111 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
G204	SET UP STERILE FIELD	100
G197	PREPARE SITE FOR CATHETER INSERTIONS	100
G192	CONNECT TRANSDUCERS TO PRESSURE LINES	100
G187	ATTACH ECG LEADS TO PHYSIOLOGICAL MONITORING DEVICES	100
G191	CONNECT TRANSDUCER TO SWAN-GANZ CATHETERS	100
G188	CALCULATE RESULTS OF CATHETERIZATION PROCEDURES	100
F139	DISPOSE OF CONTAMINATED MATERIALS	100
G177	ASSIST PHYSICIAN IN PERFORMING ANGIOGRAPHS	100
F171	SET UP X-RAY EQUIPMENT	100
G205	SET UP THERMODILUTION INJECTORS OR SYRINGES	93
G203	SET UP POWER DYE INJECTORS	93
G193	INSTRUCT PATIENTS IN CATHETERIZATION PROCEDURES	93
F155	PERFORM PHYSIOLOGICAL DATA MONITORING	93
F170	SET UP VIDEO EQUIPMENT	93
G198	PROCESS CINEANGIOGRAPHIC FILMS	93
F145	MONITOR ECGs	93
F166	SET UP PHYSIOLOGICAL RECORDING MONITORS	93
G183	ASSIST PHYSICIAN IN PERFORMING HEART CATHETER INSERTIONS	93
F144	INTERPRET ARRHYTHMIAS	93
G176	APPLY PRESSURE TO CATHETERIZATION INJECTION SITES	93
G185	ASSIST PHYSICIAN IN PERFORMING SHUNT DETECTIONS	93
G201	SET UP CARDIAC CATHETERIZATION TRAYS	86
G190	CONNECT PRESSURE TRANSDUCER-TIPPED CATHETERS TO RECORDER	86
K337	INSPECT CARDIOPULMONARY EQUIPMENT	86
F153	PERFORM INFECTION CONTROL OR UNIVERSAL PRECAUTION PROCEDURES	86
F160	RECORD PHYSIOLOGICAL MONITOR DATA	86
G181	ASSIST PHYSICIAN IN PERFORMING BALLOON PUMP INSERTIONS	86
G184	ASSIST PHYSICIAN IN PERFORMING HIS BUNDLE STUDIES	86
G195	MIX HEPARINIZED FLUSH SOLUTIONS	79
G182	ASSIST PHYSICIAN IN PERFORMING CARDIAC PACEMAKER INSERTIONS	79
G178	ASSIST PHYSICIAN IN PERFORMING ANGIOPLASTIES	72
K335	CLEAN PATIENT TREATMENT OR EXAMINATION ROOMS	72
G189	COMPLETE PROTOCOL FORMS FOR CATHETERIZATION PROCEDURES	72
K336	DISINFECT NONDISPOSABLE CARDIOPULMONARY EQUIPMENT COMPONENTS	72

TABLE A5

INSTRUCTOR JOB (STG031)

NUMBER IN GROUP: 6 AVERAGE TIME IN JOB: 34 MONTHS

PERCENT OF SAMPLE: 3% AVERAGE TAFMS: 128 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
D64	EVALUATE PROGRESS OF TRAINEES	100
D58	COUNSEL TRAINEES ON TRAINING PROGRESS	100
D51	ADMINISTER TESTS	100
D66	MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	100
D60	DEVELOP PERFORMANCE TESTS	100
D65	EVALUATE TRAINING METHODS, TECHNIQUES, OR PROGRAMS	100
D71	SCORE TESTS	100
D52	ANNOTATE TRAINING RECORDS	100
D74	WRITE TEST QUESTIONS	100
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	100
D70	PROCURE TRAINING AIDS, SPACE, OR EQUIPMENT	100
D59	DETERMINE TRAINING REQUIREMENTS	100
C41	EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	100
B28	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	100
F151	PERFORM CARDIOPULMONARY RESUSCITATION (CPR)	100
F144	INTERPRET ARRHYTHMIAS	100
B30	SUPERVISE APPRENTICE CARDIOPULMONARY LABORATORY SPECIALIST (AFSC 90430)	83
D57	CONDUCT TRAINING CONFERENCES OR BRIEFINGS	83
A14	PLAN OR SCHEDULE WORK ASSIGNMENTS	83
F161	SET UP DEFIBRILLATORS	83
D56	CONDUCT RESIDENT COURSE CLASSROOM TRAINING	67
D62	DIRECT OR IMPLEMENT TRAINING PROGRAMS	67
D63	ESTABLISH OR MAINTAIN STUDY REFERENCE FILES	67
E117	RESEARCH OFFICIAL AND COMMERCIAL PUBLICATIONS	67
A10	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	67
D68	PERFORM ANCILLARY TRAINING FOR OTHER UNITS	67
C44	EVALUATE WORK SCHEDULES	67
C39	EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	67
A5	DETERMINE WORK PRIORITIES	67
D61	DEVELOP PHASE II CURRICULUM MATERIALS	50
D55	CONDUCT PHASE II TRAINING, OTHER THAN CLASSROOM TRAINING	50

TABLE A6

SUPERINTENDANT JOB (STG025)

NUMBER IN GROUP: 7 AVERAGE TIME IN JOB: 9 MONTHS

PERCENT OF SAMPLE: <1% AVERAGE TAFMS: 227 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

TASKS		PERCENT MEMBERS PERFORMING
B22	COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED MATTERS	100
C38	EVALUATE INSPECTION REPORT FINDINGS	100
B28	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	100
C42	EVALUATE SAFETY OR SECURITY PROGRAMS	100
A3	COORDINATE WORK ACTIVITIES WITH OTHER SECTIONS	100
C49	WRITE EPRs	100
A10	ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	100
A18	SCHEDULE PERSONNEL FOR LEAVE OR TEMPORARY DUTY (TDY) ASSIGNMENT	100
A1	ASSIGN PERSONNEL TO DUTY POSITIONS	100
B21	CONDUCT SUPERVISORY ORIENTATIONS OF NEWLY ASSIGNED PERSONNEL	100
C41	EVALUATE PERSONNEL FOR COMPLIANCE WITH PERFORMANCE STANDARDS	86
B25	IMPLEMENT SAFETY OR SECURITY PROGRAMS	86
C35	ANALYZE WORKLOAD REQUIREMENTS	86
C46	INVESTIGATE ACCIDENTS OR INCIDENTS	86
A19	WRITE JOB OR POSITION DESCRIPTIONS	86
B27	INITIATE PERSONNEL ACTION REQUESTS	86
A2	ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	86
C50	WRITE RECOMMENDATIONS FOR AWARDS AND DECORATIONS	86
B20	CONDUCT STAFF MEETINGS	86
C43	EVALUATE UNIT EMERGENCY OR DISASTER PLANS	71
C45	INDORSE ENLISTED PERFORMANCE REPORTS (EPR)	71
C39	EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	71
A4	DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	71
E118	REVIEW MEDICAL RECORDS OF PATIENTS	71
C40	EVALUATE PATIENT CARE	71
C44	EVALUATE WORK SCHEDULES	71
A7	DEVELOP WORK METHODS OR PROCEDURES	71
B34	SUPERVISE MILITARY PERSONNEL WITH AFSC OTHER THAN 904X0	57
E121	WRITE SPECIAL REPORTS, SUCH AS QUARTERLY REPORTS, OIs, STANDARD OPERATING PROCEDURES, AND HOSPITAL REGULATIONS	57